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STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

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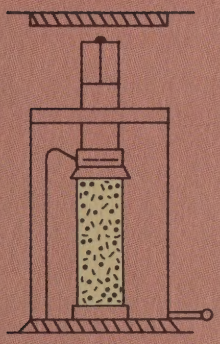
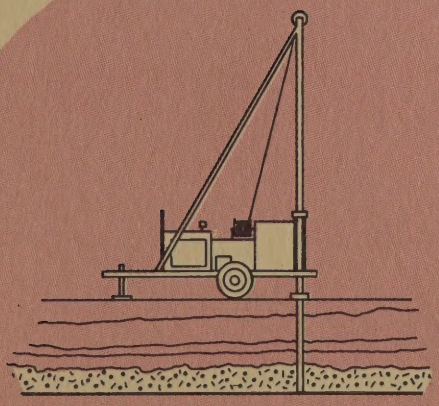
SOIL MECHANICS BUREAU





PILE LOAD TEST REPORT

INTERSTATE 88

PIN 9357.02 FISH 72-5

OCTOBER, 1973

SM 238b (1/73)

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

DATE October 30, 1973

SUBJECT PILE LOAD TEST
BRIDGE NO. 12
PIN 9357.02

FROM Robert C. Houghton, Senior Soils Engineer RCH

TO Bernard E. Butler, Associate Soils Engineer ✓

The attached Pile Load Test Report represents the summary of all activities which were initiated for the design, testing and installation of piles for this structure.

The pile load test was the second one which New York State has performed under Specification 88 PLT. The cost of the load test is $15,000.

This report prepared by Robert McCarty and Robert Houghton represents the first attempt at a comprehensive review and analysis of the pile load test data. It is planned to prepare a similar report for all future pile load tests which are progressed.

RCH:MVM

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INTRODUCTION

1. On July 16 through July 18 and July 23, 1973 a Pile Load Test, in accordance with Item 88 PLT as described in the proposal, was performed at the site of the West Abutment of the Eastbound Bridge of Bridge #12, Mainline over the Susquehanna River of I-88, Susquehanna Expressway (PIN 9357.02 311, FISH 72-5). The Pile Load Test was performed on an HP 12 x 53, 26 feet in length with approximately 25 feet in the ground. Two telltales were provided for the purpose of determining the amount of resistance carried by the tip and by the side of the pile. An H-pile is not usually used as a friction pile, but the soil type encountered at this site would not readily permit the driving of displacement type piles, which are commonly used as friction piles.

   This load test consisted of a static load test and two constant rate of penetration (CRP) tests. The purpose of the second CRP is discussed in Appendix A of the report.

   Those present during the field testing were as follows:

Ernest Mosley Ronald Heller Mario Goldberg	-	Raamot Associates (Contractor's Engineering Consultant for P.L.T.)
Philip Smith Gary Beckley Kenneth Freebern	-	Guild Moulton (Bridge Subcontractor)
Philip Pollard	-	NYS DOT E.I.C.
Brian Williams	-	NYS DOT Inspector
Ronald Sickles	-	" " "
John Cobb	-	" " "
Robert Houghton	-	NYS DOT Soil Mechanics Bur.
Robert McCarty	-	NYS DOT Soil Mechanics Bur.

   Most of the details of the pile load test setup, pile, pile driver and associated equipment can be found in Pile Load Test Report (Appendix A) submitted by the Contractor which is attached to this report. Pictures of the test set-up are also included with the Test Report.

Basic Load Test Equipment Used

   The pile load test was conducted by jacking against the dead weight of approximately 200 tons of H-piles. Timber cribbing was placed beneath the H-piles to provide sufficient working

room. A reference beam, located on the north side of the test pile running in an east-west direction was supported on two 6 inch diameter steel pipes driven into the subsoil a depth of ten feet. The west end of the reference beam was fixed to the steel pipe by weld while the east end of the beam was permitted to move. The reference beam projections completely surrounded the test pile, with 5 dial gages clamped to it. Two gages were for the telltale movement; the northerly one for the pile movement in the alluvial material, and the southerly one for the movement of the tip of the pile. The remaining three dial gages were placed on the outside of the flange, one on the west side of the pile and two on the east side. A back-up measuring system consisting of a wire and mirror was also used. A load cell containing approximately 30 SR-4 strain gages was used to determine the load on the pile. This system was used in conjunction with the pressure gage connected to the jack's fluid line.

2. Subsurface Conditions

The subsurface soils at the site consist of 2 to 3 feet of fill material over 13 feet of very loose brown silt with some sand and a trace of clay over 60 feet of medium compact to very compact brown gravel with some sand and silt and a trace of clay containing boulders, over bedrock. The very loose material is recent alluvium underlain by glacial outwash.

The subsurface exploration location plan and Generalized Subsurface Profiles may be found on Drawing No. 9SM 1749A and 9SM 1749B R-1 in Appendix B of this report.

3. Design Assumptions

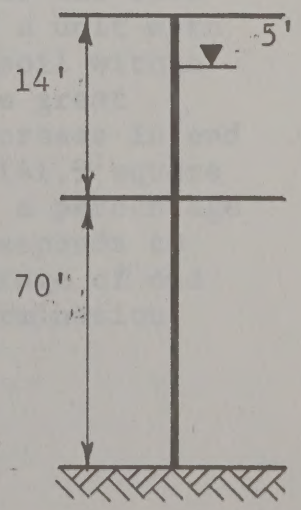
Soil Parameters used in design are as follows.

Very loose brown silt with some sand and a trace of clay

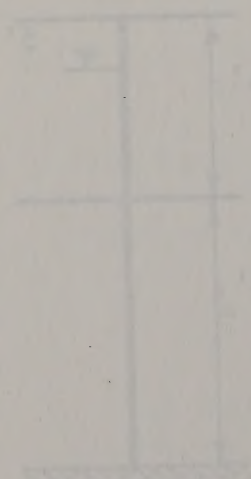
Scourable Material (ϕ &C =o assumed)

Medium compact to very compact brown gravel with some sand and silt and a trace of clay, containing boulders

ϕ = 37.5 C=0



Ledge rock



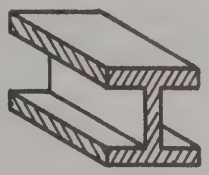
The surface fill material and the alluvial material described as "very loose brown silt with some sand and a trace of clay" were considered to have a high scour potential for design purposes resulting in no contribution to skin friction. In design it was determined that the influence of the surface fill material and alluvial material combined resulted in only 3.5 tons of skin friction for the test pile.

Static Analysis

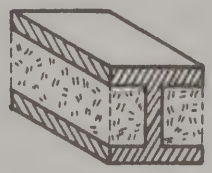
Depending upon the type of soil encountered the failure surface for the tip of an H pile may theoretically be;

a) the actual cross-sectional area of steel,
b) the end area bounded by the least perimeter of the pile tip and soil.

Through the use of telltales on the H-pile tested, the percentage of load carried by the sides of the pile and thence the failure criteria of the soil within the flanges of the pile was determined.



x-section of failure surface at pile tip when soil within flanges does not act as a unit with the H-pile.
End area = 15.58 square inches



x-section of failure surface at pile tip; H-pile and soil within flanges act as a unit during failure.
End area = 141.90 square inches

Static analysis of the two failure types on a 12 x 53 H-pile indicated an ultimate pile capacity of 46 tons for the case where the soil within the flanges did not act as a unit with the H-pile, and 280 tons for the case where the soil within the flanges did act as a unit with the pile. The great disparity in results may be attributed to the increase in end area of the H-piles from 15.58 square inches to 141.9 square inches for the pile and soil unit. Expressed as a percentage of the load carried in end bearing, 46 tons corresponds to 50% and 280 tons corresponds to 90%. The percentage of end bearing is probably the most critical input determination in the wave equation analysis.

Preliminary Wave Equation Analysis

Two wave equation analyses were performed during design with end bearing components of 50% and 90% of the supporting capacity of the pile. The reason for the large difference in percentage of end bearing is discussed in the "Static Analysis" above. The analyses indicated that driving resistances of 2.5 blows per inch for the 50% end bearing and 1.2 blows per inch for the 90% end bearing would be necessary to attain the required ultimate load of 94 tons per pile.

Selected Lengths

The static analysis for total mobilization of steel and soil at the end of the pile and between the flanges resulted in a design length of 17.5 feet. The static analysis for point resistance of only the steel area indicated that a pile length of 35 feet would be required to support an ultimate load of 94 tons. Since more than ten feet of scourable material is present a minimum penetration of 10 feet would be required into firm material. This fact, coupled with an average of the static analyses, resulted in a length of 25 ft. selected for the pile load test.

4. RESULTS AND INTERPRETATION

The pile failed at an ultimate load of approximately 194 tons (Fig. 1) resulting in a safety factor of 4.1. It was, therefore, important to determine the pile length required and driving criteria to be used to insure that the remaining piles were installed efficiently and economically.

Several methods are available for designing pile lengths for a particular structure. The one most frequently used by the Soil Mechanics Bureau is Nordlunds'[1] static analysis. This method is based on the assumed soil strength parameters and yields the ultimate pile capacity. From this method one can also obtain the percentage of pile tip resistance.

The prediction of driving resistance is best determined through use of the wave equation theory based on a pre-determined length of pile necessary to support the known design load. One of the most important elements of input for the wave equation program [2]

is the percent tip resistance. If no pile load test data is available the percentage tip resistance would have to be estimated from the static analysis. Further refinement of input for the wave equation analysis is available through information derived from the pile load test, and even better information is obtained if the pile load test incorporates a telltale. In the absence of a telltale on the test pile VanWeele's method[3] may provide an estimate of the percent tip resistance although it is empirical in nature. However, if the pile has a telltale an exact method for determining the percent tip resistance is available since we know the exact elastic shortening of the pile at any desired load. Chellis[4] gives the following formula for calculating the load, R, which is left in the pile for any specific elastic shortening.

$$R = \frac{\delta AE}{L}$$

The initial static analysis (Nordlund's) for this pile load test indicated that 40% of the load would be supported at the tip. By using VanWeele's method after the test was completed the tip resistance was calculated at approximately 90 percent (Fig. 2). The Chellis method indicates that the percent tip resistance at 2 times the design load is about 70 percent. Plotting up the above percentages versus loads results in graphs as shown in Figure 3. Figure 4 shows the early loading portion of the same curves. It can be seen that the driving resistance increases substantially as the percent tip resistance decreases. Based on these wave equation analyses the blow count which we recommended to the Bridge Subdivision for each of the production piles was 20 blows per ft. (1.7 blows per inch) with a minimum length of 25 feet.

5. RECOMMENDATIONS AND DISCUSSION

Since this was one of the first pile load tests conducted under the new specification, several modifications may be in order. Below are listed some of the items that should be clarified or amended in the new specification.

A. The detail for the telltale attachment was unclear even though it apparently conformed with AISC nomenclature. The telltale pipe became dislodged during the driving of the H-pile because the pipe was inadequately welded to the pile as a result of the misinterpretation. It is recommended that the drawing which shows the welded telltale pipe be modified to make the exact locations of the weld more clear.

B. This specification was not clear as to the exact procedure for removing the loads during the rebound portion of the CRP test. This could be clarified in the new specification by adding the following:

> "After completion of the above procedure, the load shall be removed in increments of 25 percent of the final load achieved. The rebound loads shall be maintained for 1 minute and readings of all dial gages shall be taken and recorded immediately prior to removing the next load increment."

C. As noted in Appendix A of the above report the first CRP test was rejected because of unexplained movement in the reference beam system. It is recommended that the importance of the reference beam installation be emphasized more in the specification so that in future pile load tests this situation will not occur.

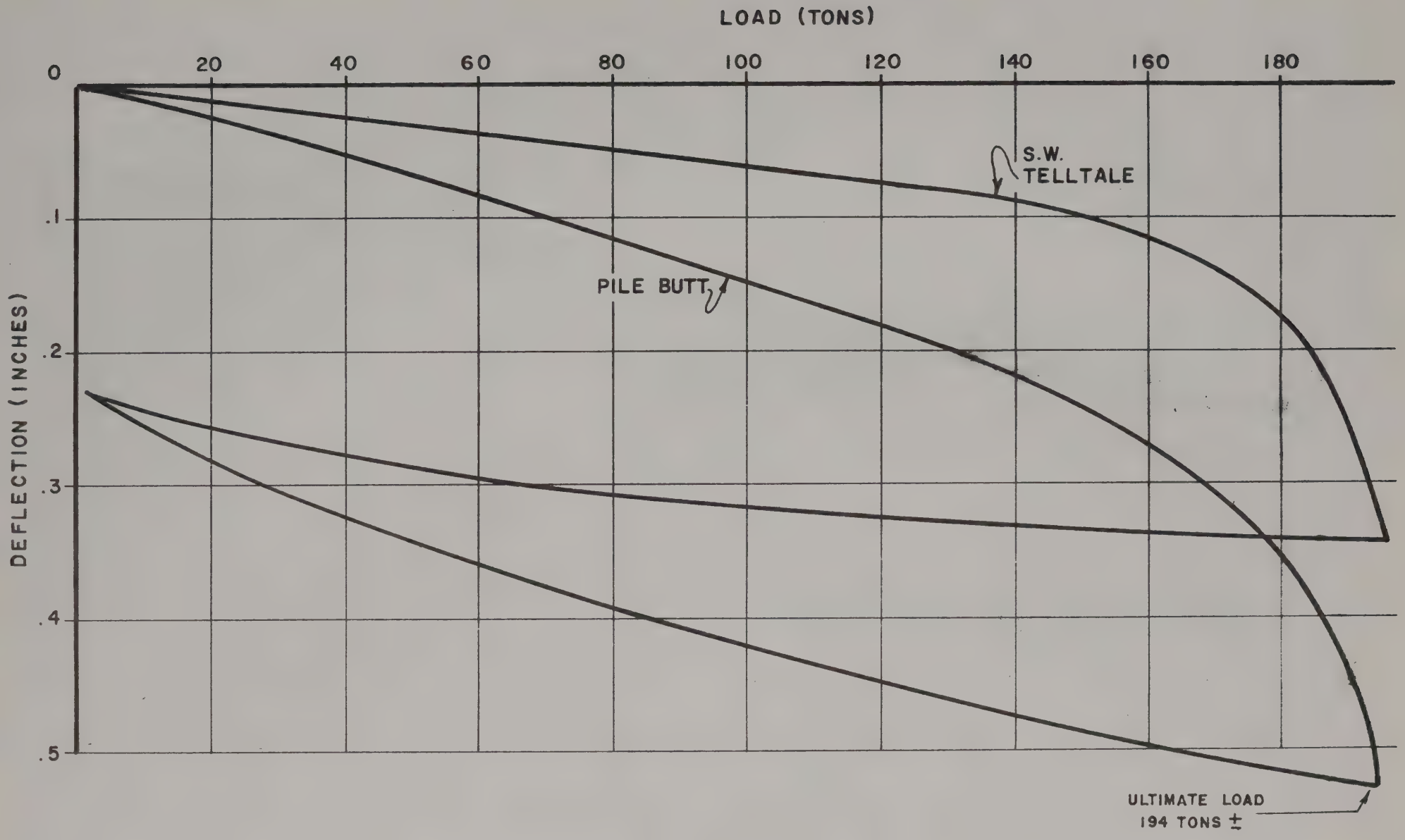
D. Based on the limited experience which we have had with pile load tests it appears that the static load portion of the test is not required in all instances. Most of the information desired from the load test is obtained from the CRP. In cases where it is important to know the settlement characteristics during the 24 hour hold portion it would be advisable to conduct the static portion of the test. However, we feel that whether the static test is included or not should be decided on an individual job basis by the Design Engineer.

E. The loading rate for the pile was .01 inches per minute. Consideration based on more study should be given to whether this may be increased to .02 inches per minute, even for short piles.

F. Richard Dudgeon Inc. (Brooklyn, NY) provided a load pacer for application of the load during the CRP. Participants in the load test were very impressed with this unit and it is suggested that it be given serious consideration for

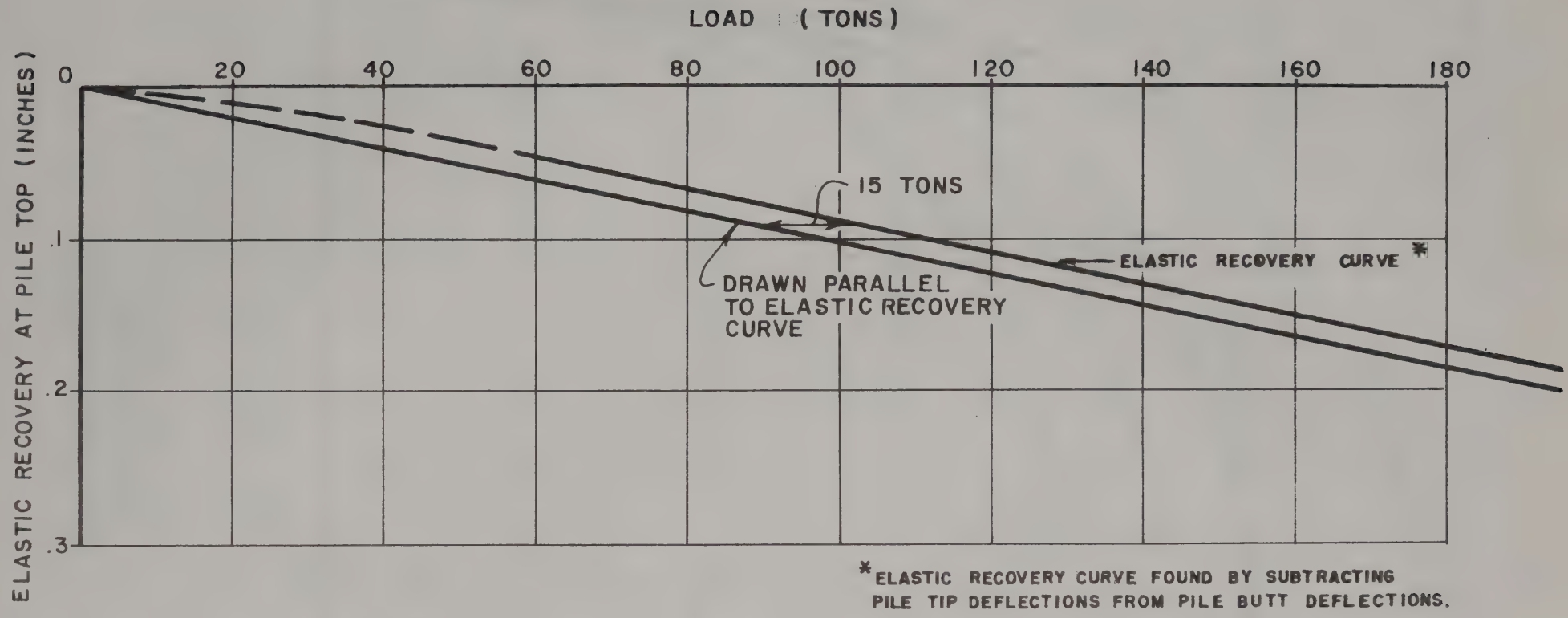
future load tests. The load application through this unit was uniformly and easily applied and adjusted by the operator. It seems to have many advantages over the old system of applying the load manually with a jack.

G. Also used on this test was a load cell device with SR4 strain gages which gave the exact load on the pile. By using the load cell it was easier to determine the load in the pile than by reading the more inaccurate pressure gage on the jack. While not all companies have load cells it is recommended that serious consideration be given for their use on future tests. Since we will be conducting more load tests in the future, it might be feasible for New York State to purchase a load cell of its own.



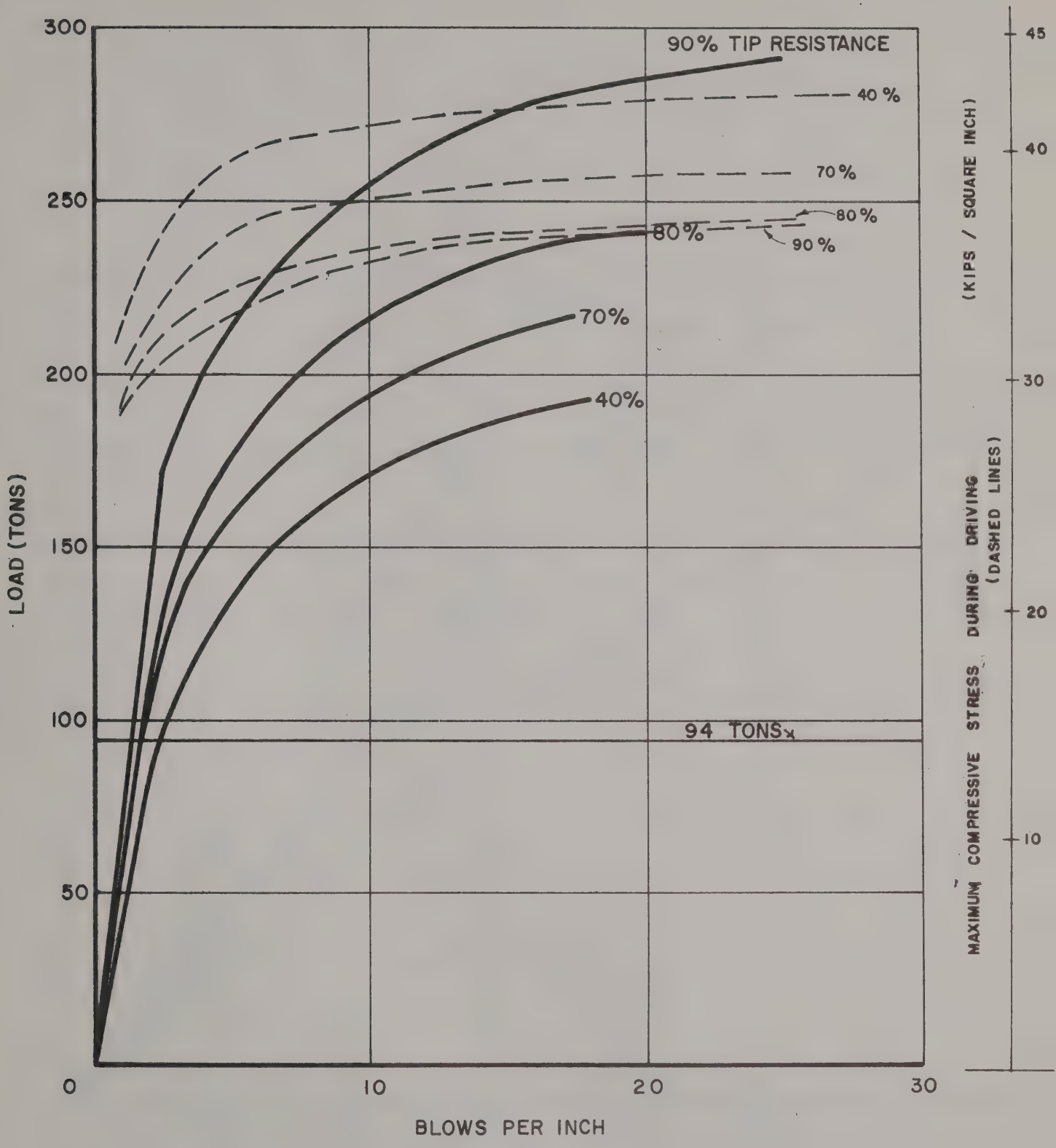
SECOND CRP

FIG. 1



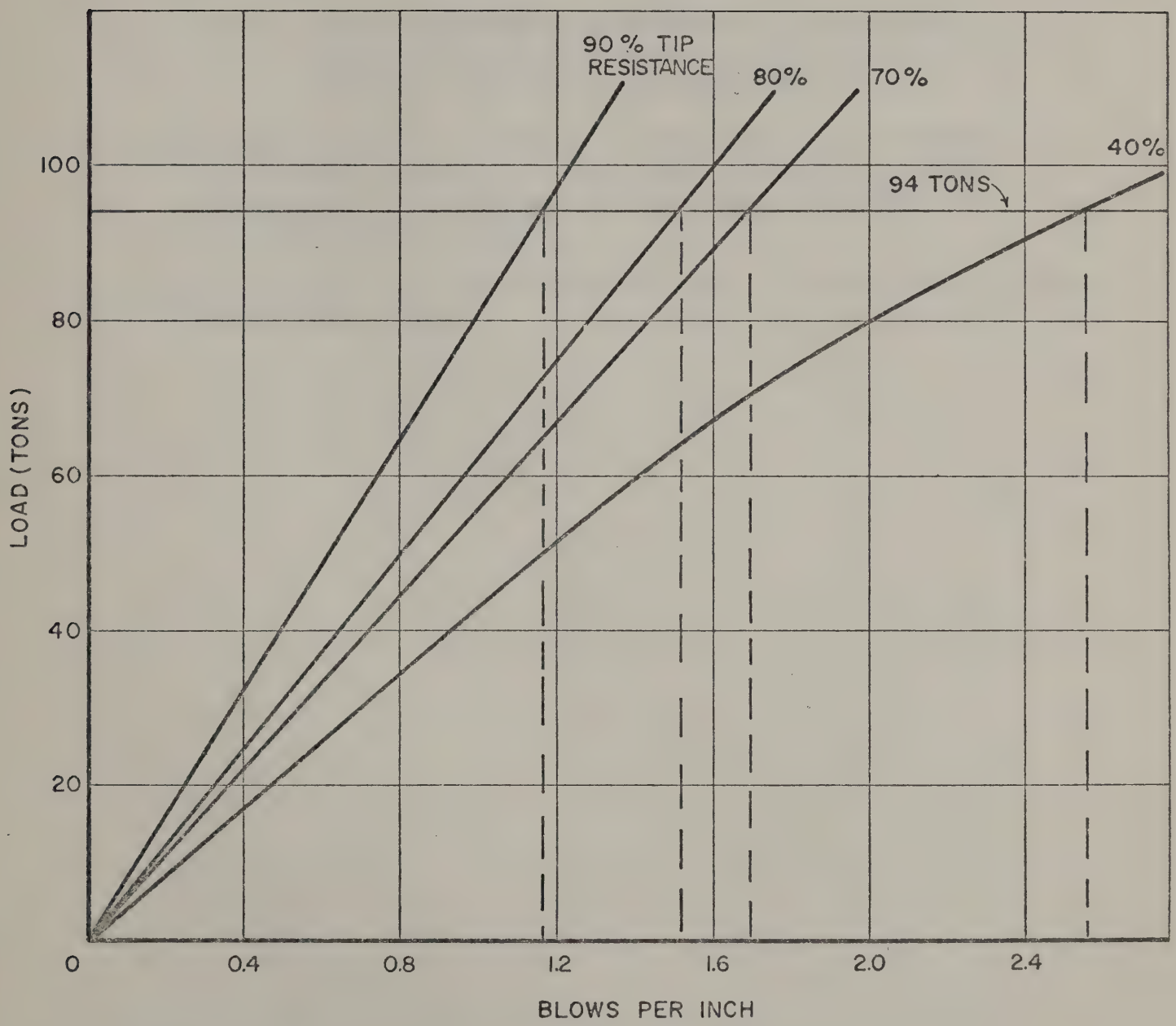
VAN WEELE'S CONSTRUCTION
FOR
DETERMINING PERCENT TIP RESISTANCE

FIG. 2



DRIVING CRITERIA
BASED ON WAVE
EQUATION ANALYSES

FIG. 3



DRIVING CRITERIA
BASED ON WAVE
EQUATION ANALYSES

FIG. 4

1. Nordlund, R.L. "Bearing Capacity of Piles in Cohesionless Soils", ASCE Journal of the SM&FE Division, May 1963.

2. Lowery, L.I., Hirsch, T.J., Edward, T.C., Coyle, H.M., and Samson, C.H.; "Pile Driving Analysis - State of the Art, Research Report 33-13" Texas Transportation Institute, January 1969.

   Note: Input constants recommended in this report have been revised and the revised values were used for the pile load test analysis.

3. VanWeele, Ir. A.F., "A Method of Separating the Bearing Capacity of a Test Pile into Skin Friction and Point Resistance," Proceedings of the Fourth IC SM&FE, pp 76-80, London, 1957.

4. Chellis, Robert D., "Pile Foundations,", 2nd edition, p. 464, McGraw Hill, 1961.

APPENDIX

APPENDIX A — PILE LOAD TEST REPORT BY RAAMOT ASSOC.

APPENDIX B — DRAWINGS NUMBERED 9SM 1749A & 9SM 1749B

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REPORT

ON

PILE LOAD TEST

IN

BRIDGE 12, HARPURSVILLE-AFTON INT. RT. 508
NEAR HARPURSVILLE, NEW YORK

NYS CONTRACT NO. 9357.02, FISH 72-5

BY

Ernest T. Mosley

Ernest T. Mosley, P.E.

Submitted to:

Guild-Moulton Construction Corp.
201 South Main Street
North Syracuse, N.Y. 13212

Date: July 26, 1973

Distribution: 5 copies - Guild-Moulton Construction Corp.

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Appendix:

Fig. 1 Load & Settlement vs. Time for Static Load Test

Fig. 2 Load vs. Settlement for Static Load Test

Fig. 3 Load vs. Settlement for CRP Test of July 18, 1973

Fig. 4 Load vs. Settlement for CRP Test of July 23, 1973

Fig. 5 Jack Calibration Sheet

Jack Calibration

Field Data Sheets 1-10 for Static Load Test of July 16-18, 1973 and CRP Test of July 18, 1973

Surveyor's Level Data for Static Load Test of July 16-18, 1973 and CRP Test of July 18, 1973

Surveyor's Level Data for Static Load Test of July 20, 1973

Field Data Sheets 1-3 for CRP Test of July 23, 1973

Surveyor's Level Data Sheets 1-3 for CRP Test of July 23, 1973

Plot of Surveyor's Level Data showing apparent deviations in elevation of reference beam during CRP Test of July 23, 1973

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Driving Record for Load Test Pile - Pile No. 164

Soil Boring Log for Hole No. DH-39

Record of Susquehanna River level adjacent to Test Pile site during testing period

Guild-Moulton Construction Corp. letter of May 10, 1973 and five sheets describing the test pile, method of installation and the load test set-up.

ABSTRACT

The HP12x53 steel test pile, which had been driven vertically to a penetration of 25 feet below grade, was load-tested statically in axial compression to twice its design load of 47 tons which resulted in a gross settlement of 0.15 inches and a net settlement of 0.02 inches. It was subsequently load-tested by the constant rate of penetration method at a rate of 0.01 in/min. to 188 tons which caused progressive failure. Five days later it was again subjected to a similar CRP test to approximately 194 tons which caused progressive failure.

INTRODUCTION

This report presents the results of testing Pile No. 164 in axial compression. This pile is an HP12x53 steel beam, having a design load of 47 tons, which was driven vertically 25 feet below grade at Elevation 955.3 feet. It is located in the east-bound lane of the west abutment to a new bridge over the Susquehanna River near Harpursville, New York.

This pile was tested in accordance with the State of New York specification for this project. This required that the pile be subjected to a static load test in compression to twice its design load, and subsequently be subjected to a constant rate of penetration test to four times its design load, or failure if that occurred first.

In addition to test results, a brief description is given of the soil conditions, how the pile was driven and how it was tested.

SOIL CONDITIONS

The appendix to this report includes a copy of the log for Hole No. DH-39 which is understood to be the nearest soil boring to the test pile. It is understood that the test pile, Pile No. 164, is located at Station 786+00, offset 58.5 feet to the right, according to the base line used for the soil boring locations. Since Hole No. DH-39 is located at Station 785+50, offset 33 feet to the right, the distance from the test pile to the soil boring is approximately 56 feet.

The boring log shows the ground surface elevation to be 954.4 and the driving log for the test pile indicates grade was 955.3. The test pile area is understood to have about 2 feet of fill on the original ground surface which was probably stripped of topsoil before the fill was placed.

The boring log shows the pile penetrated 5 feet of non-plastic silt, 10 feet of very loose fine sand and 10 feet of medium to dense fine to coarse sand and gravel with some silt. The soil below the pile tip to a depth of 41.5 feet where the boring was terminated is shown to be generally coarse sand and gravel with some silt, of medium to dense consistency, increasing in density with depth.

TEST PILE INSTALLATION

The original pile designated for testing is 18.5 feet south of Pile No. 164 which was ultimately tested. The original pile was driven but one of the tell-tale boxes broke loose from the pile during driving so Pile No. 164 was driven after strengthening the connection of the tell-tale boxes to the pile.

The pile was driven with a Link Belt 520 diesel hammer operating at an energy of 22,000 ft-lbs per blow. It was stopped at a penetration of 25 feet below grade where it had a final resistance of 5 blows per inch.

The appendix shows details of the tell-tales and the boxes supporting and protecting them. The pile tip fastened to the HP12x53 beam is also shown. For Pile No. 164, one tell-tale rests 20 inches above the pile tip and the other rests 9 feet above the first one. The tell-tale resting 20 inches above the pile tip is a 1-inch diameter reinforcing bar, and the other is a 2-inch diameter pipe.

A 1-inch thick steel plate was welded to the pile head for supporting the test jack.

LOAD TEST SET-UP

The test load was applied to the pile by means of a hydraulic jack having a 250-ton capacity. For a reaction to the test load, HP12x53 beams having a total weight in excess of 200 tons were stacked over a test beam and supported by two timber cribs. In between the test jack and the test beam a load cell was placed to provide a check system for measuring the test load applied to the pile.

Settlement of the pile butt was measured by three extensometers fastened to a reference beam as shown in the sketches in the appendix. Tell-tale settlements were measured in a similar manner. A wire-mirror-scale system was used as a secondary method of measuring pile butt settlement. A surveyor's level was used to observe any movement the reference beam might experience during the testing. The reference beam was supported by steel pipes driven 10 feet below grade at a distance 10 feet from the test pile. The cribbing supporting the steel beams was more than 10 feet from the test pile. The benchmark used for the surveyor's level was a spike driven into a large tree approximately 75 feet from the test pile.

LOAD-TESTING

The static load test to twice the design load of 47 tons was applied in cycles. It was raised to 47 tons, then reduced to zero, then increased to 94 tons, then reduced to zero again, then increased to 94 tons again and held for 24 hours, then reduced to zero again. The field data sheets and Fig. 1, included in the appendix, show how the load and pile settlement varied with time. Fig. 2 shows a graph of load versus settlement for the static testing. The results were a gross settlement of 0.15 inches and a net settlement of 0.02 inches according to the extensometers.

The first CRP test which consisted of jacking the pile down at a rate of 0.01 inches per minute resulted in a maximum load of 188 tons which produced progressive settlement with no increase in load. The test load was applied by means of a Dudgeon variable speed power pump which facilitated making the pile penetrate at a constant rate.

During this testing it was found the surveyor's level indicated an apparent movement of the reference beam and cribs which varied up to 7/8 inches. A study of the data indicated the apparent movement was erratic and did not reflect cycling of the test load as it would logically do if it were moving. It therefore appeared this data was bad. A check on level readings was made July 20, 1973

using a second surveyor's level. Initial readings on the reference beam and cribbing were made before applying load to the pile, and then after adding increments of load up to 142 tons. Keeping the levels level when making readings was a problem, and required several readjustments per reading. However, after following this procedure, the resulting apparent movements of the cribs and reference beam were very small and followed a logical pattern with respect to the test loading.

It was decided another CRP test should be made using two surveyor's levels with frequent readings. This was done July 23, 1973 with reasonable results. A plot of the apparent vertical movement at each end of the reference beam for each level is shown in the appendix. The calculated apparent movement of the midpoint of the reference beam is within the limits stated in the specifications. Limits in accuracy of the surveyor's level system is believed to account for most of the apparent movement of the reference beam.

During the second CRP test, approximately 194 tons were required to cause the pile to penetrate at a rate of 0.01 inches per minute with no increase in load.

During the static load test there was apparently a problem with the wire-mirror-scale system. On sheet 6 of the field data it can be seen that, between the readings

at 0704 and 1304 July 17th, the scale reading changed 3/64" (0.047") while the three extensometers on the pile butt showed virtually no movement. After this the mirror was reset, but the system continued to show changing readings of 4/64" (0.063") from 1304 to 2304 July 17th while the three extensometers changed only 0.003 inches. This relative movement accounts for the difference in final readings between the two systems after all the load was removed. Although the reason for the problem with the wire-mirror-scale system is not clearly understood, it is recommended that for future tests the wire be suspended over a pully at one end with a weight on it to maintain a constant tension in the wire.

River level readings during testing varied less than one foot. Since the test pile is located near the river bank and the soil is granular, it is reasonable to conclude the ground water at the test pile would lie close to the level of the river. River level readings are recorded in the appendix.

APPENDIX

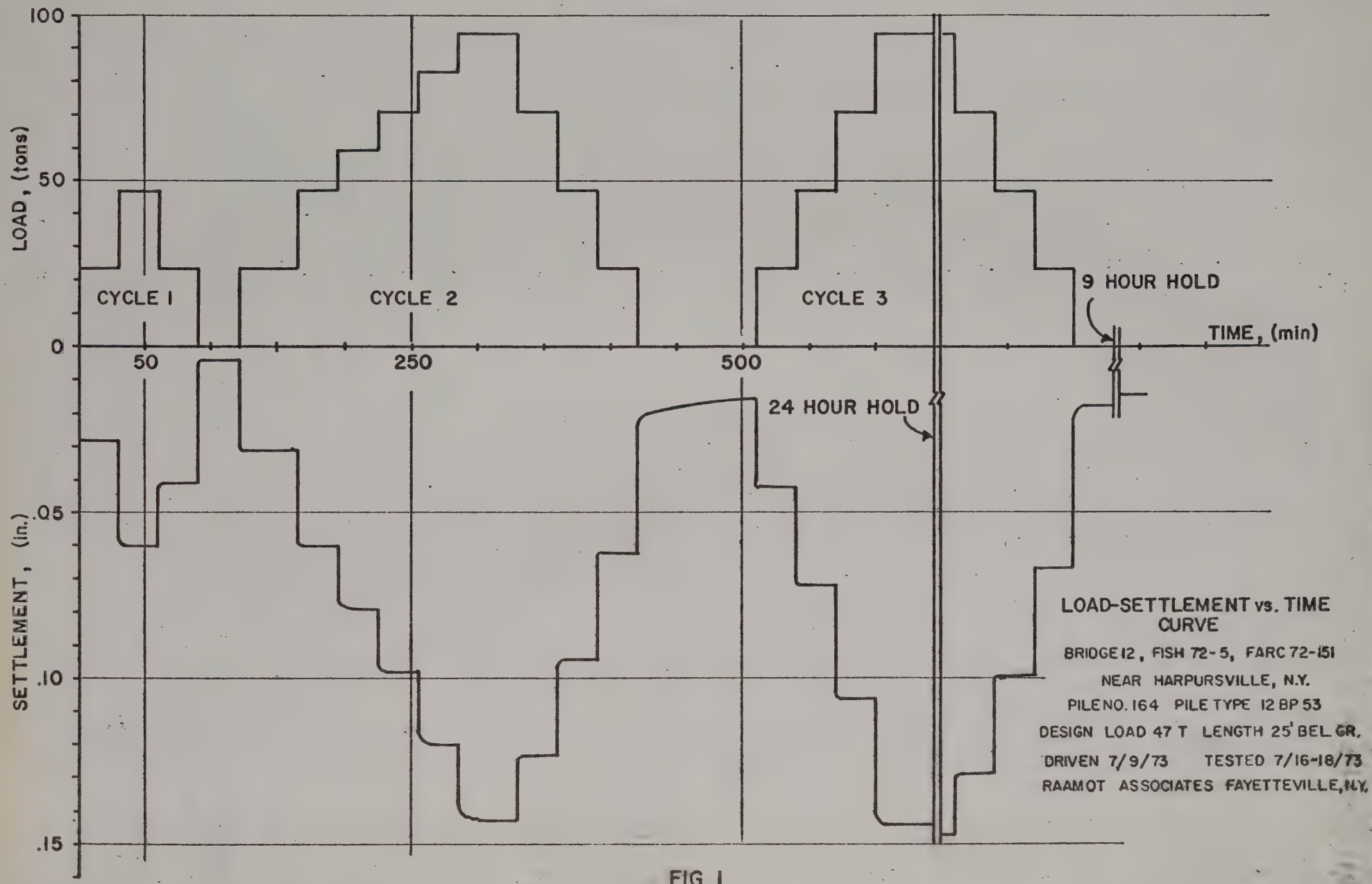

100
50
0
LOAD, (tons)
CYCLE 1
CYCLE 2
CYCLE 3
9 HOUR HOLD
TIME, (min)
50
250
500
24 HOUR HOLD
.05
.10
.15
SETTLEMENT, (in.)
LOAD-SETTLEMENT vs. TIME CURVE
BRIDGE 12, FISH 72-5, FARC 72-151
NEAR HARPURSVILLE, N.Y.
PILE NO. 164 PILE TYPE 12 BP 53
DESIGN LOAD 47 T LENGTH 25' BEL. GR.
DRIVEN 7/9/73 TESTED 7/16-18/73
RAAMOT ASSOCIATES FAYETTEVILLE, N.Y.

FIG. 1

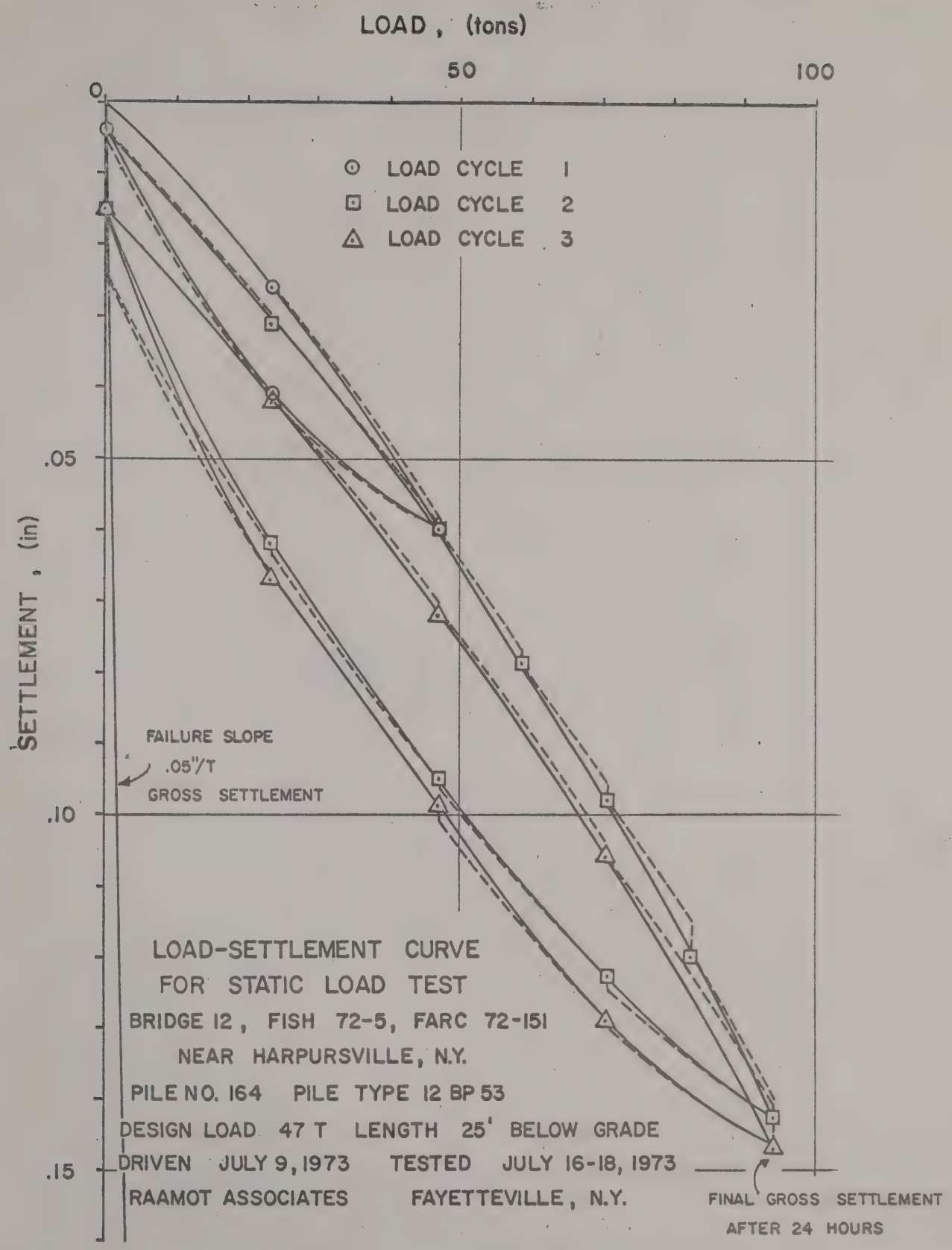

LOAD , (tons)
0
50
100
LOAD CYCLE 1
LOAD CYCLE 2
LOAD CYCLE 3
SETTLEMENT , (in)
.05
.10
.15
FAILURE SLOPE
.05"/T
GROSS SETTLEMENT
LOAD-SETTLEMENT CURVE
FOR STATIC LOAD TEST
BRIDGE 12 , FISH 72-5, FARC 72-151
NEAR HARPURSVILLE, N.Y.
PILE NO. 164 PILE TYPE 12 BP 53
DESIGN LOAD 47 T LENGTH 25' BELOW GRADE
DRIVEN JULY 9, 1973 TESTED JULY 16-18, 1973
RAAMOT ASSOCIATES FAYETTEVILLE, N.Y.
FINAL GROSS SETTLEMENT
AFTER 24 HOURS

FIG. 2

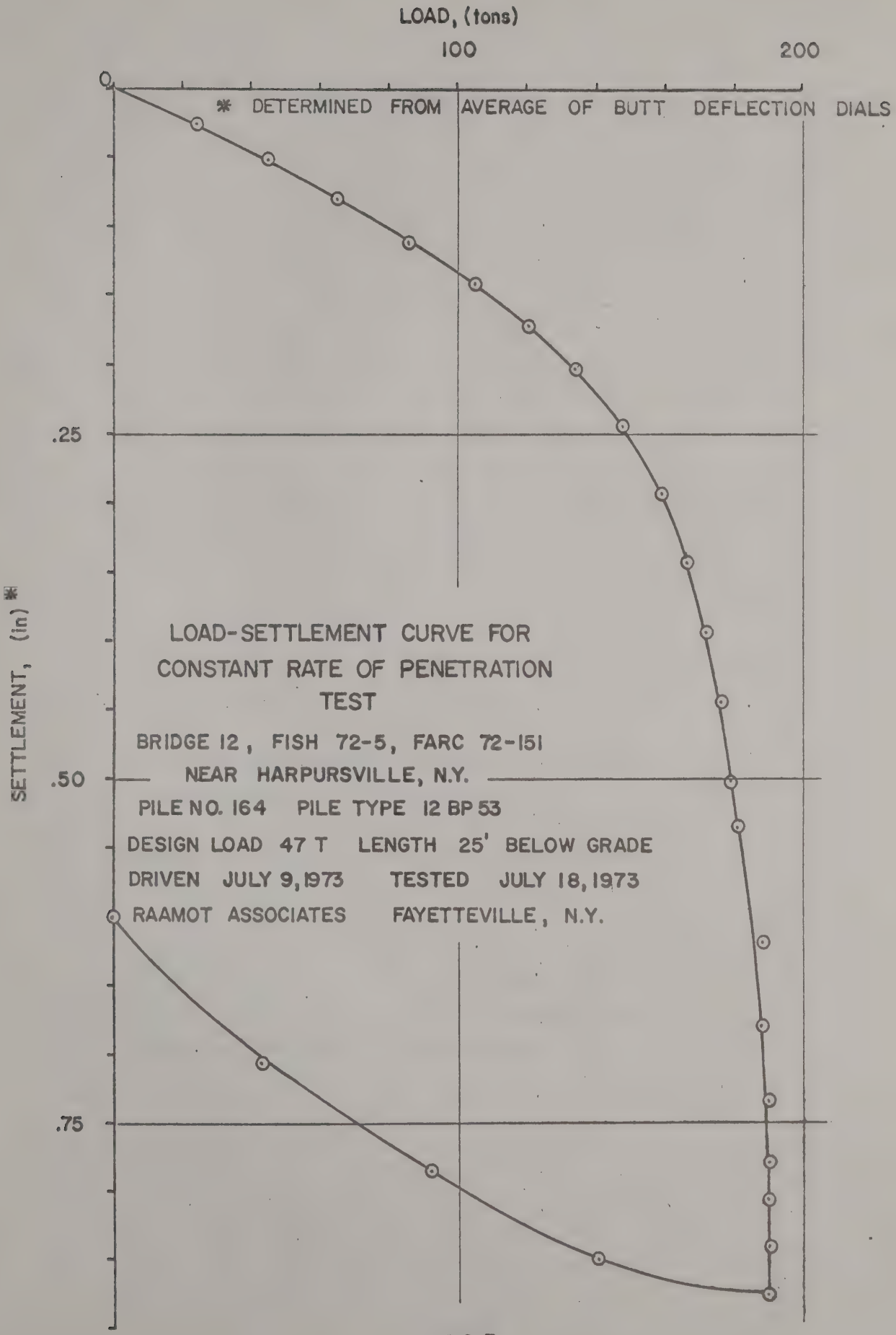

LOAD, (tons)
100
200
* DETERMINED FROM AVERAGE OF BUTT DEFLECTION DIALS
.25
.50
.75
SETTLEMENT, (in) *
LOAD-SETTLEMENT CURVE FOR
CONSTANT RATE OF PENETRATION
TEST
BRIDGE 12, FISH 72-5, FARC 72-151
NEAR HARPURSVILLE, N.Y.
PILE NO. 164 PILE TYPE 12 BP 53
DESIGN LOAD 47 T LENGTH 25' BELOW GRADE
DRIVEN JULY 9, 1973 TESTED JULY 18, 1973
RAAMOT ASSOCIATES FAYETTEVILLE, N.Y.

FIG. 3

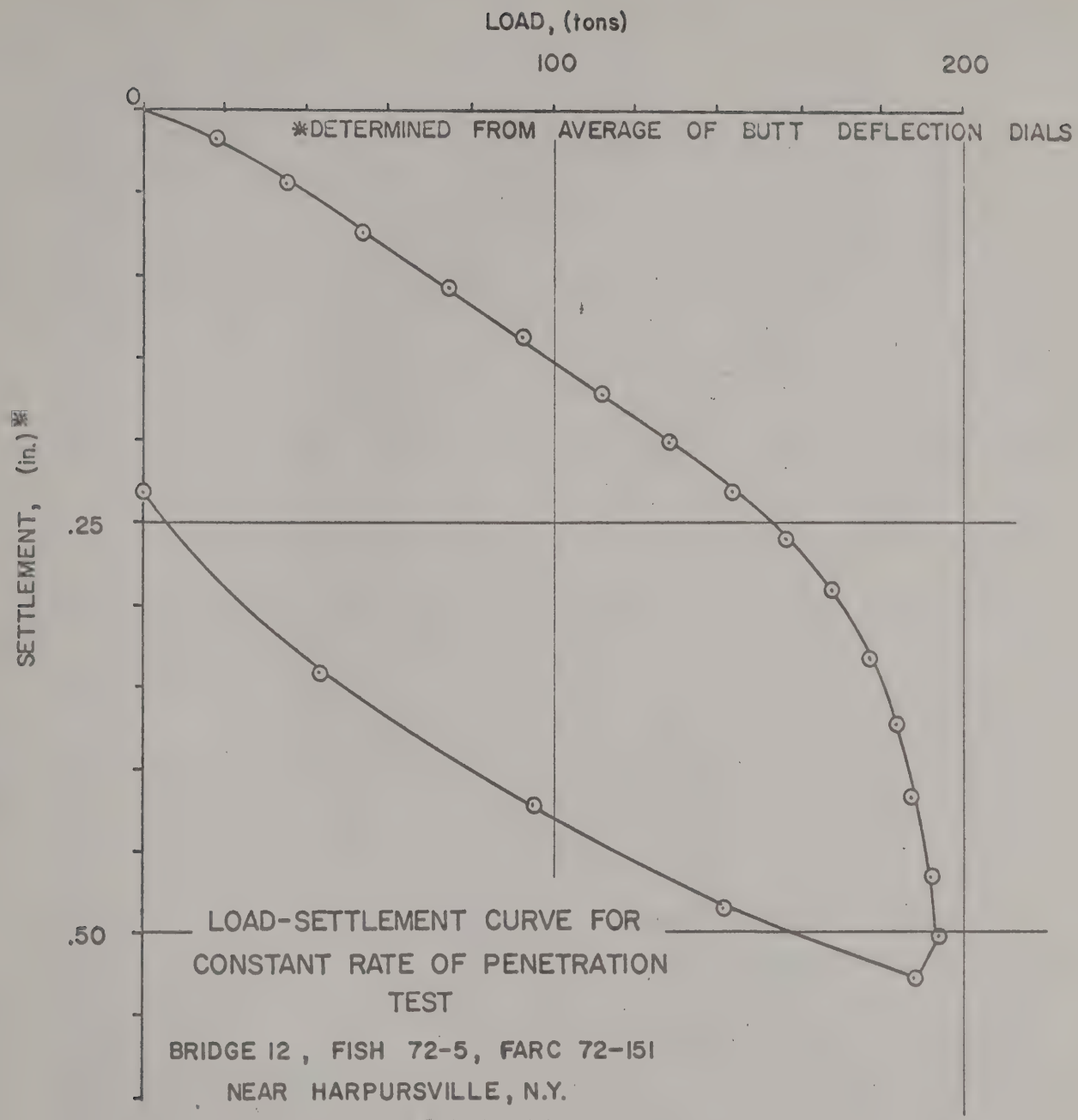

LOAD, (tons)
100
200
0
*DETERMINED FROM AVERAGE OF BUTT DEFLECTION DIALS
SETTLEMENT, (in.)*
.25
.50
LOAD-SETTLEMENT CURVE FOR
CONSTANT RATE OF PENETRATION
TEST
BRIDGE 12 , FISH 72-5, FARC 72-151
NEAR HARPURSVILLE, N.Y.
PILE NO. 164 PILE TYPE 12BP53
DESIGN LOAD 47 T LENGTH 25' BELOW GRADE
DRIVEN JULY 9, 1973 TESTED JULY 23, 1973
RAAMOT ASSOCIATES FAYETTEVILLE, N.Y.

FIG. 4

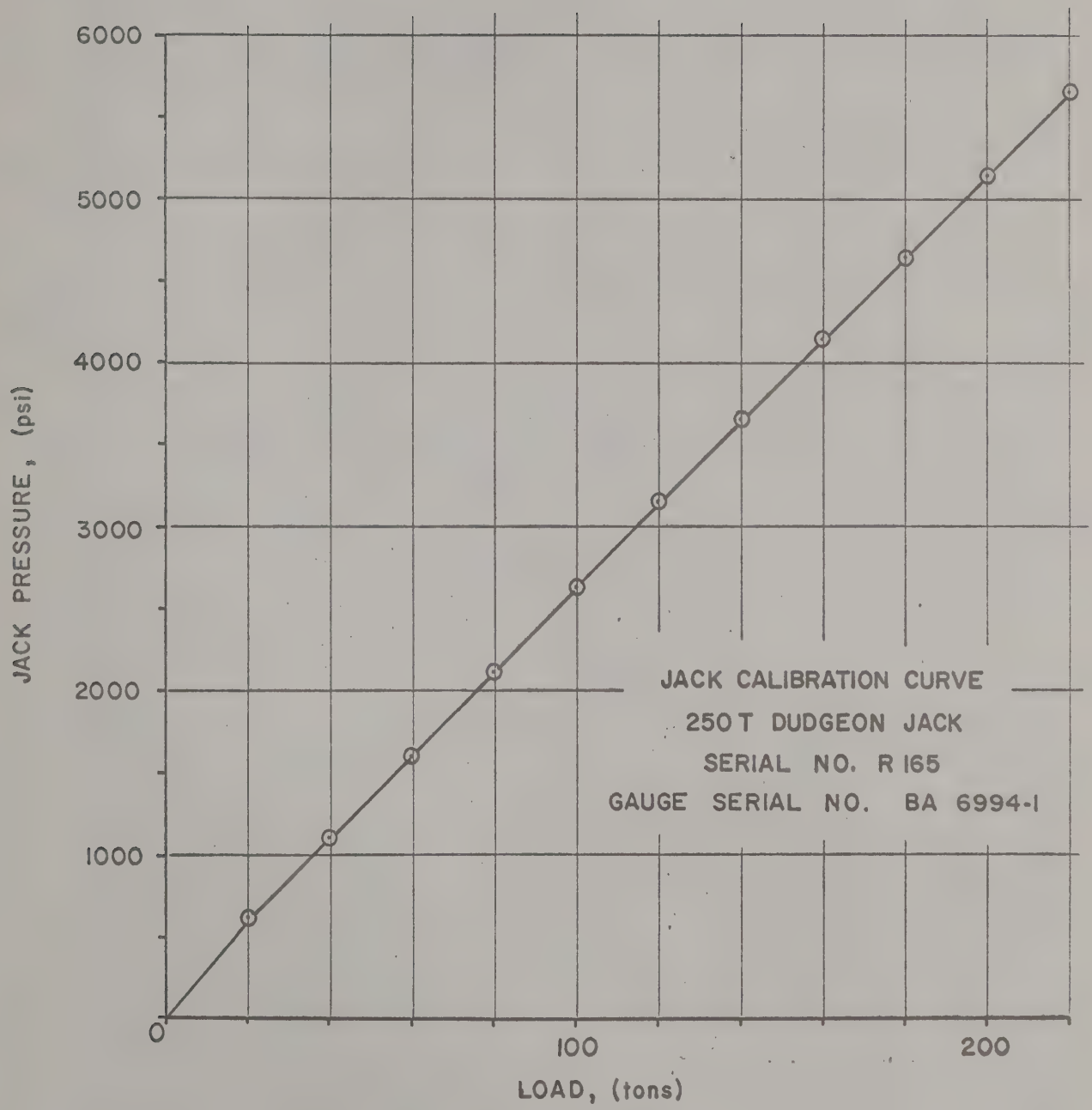
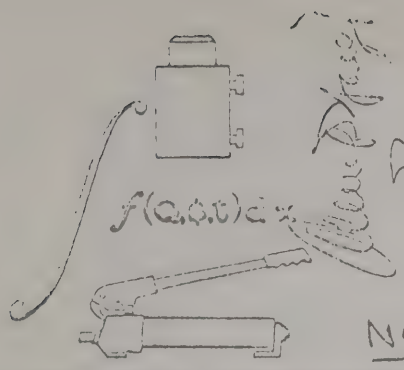

6000
5000
4000
3000
2000
1000
0
JACK PRESSURE, (psi)
100
200
LOAD, (tons)
JACK CALIBRATION CURVE
250 T DUDGEON JACK
SERIAL NO. R 165
GAUGE SERIAL NO. BA 6994-1

FIG. 5



RICHARD DUDGEON, INC.
MANUFACTURERS AND DESIGNERS OF HYDRAULIC SYSTEMS SINCE 1900
7A Market Street, Stamford, Connecticut 06902 Tel. 203-327-7217 / 212-7[illegible]

NOTE: 10 1/16" DIA. RAM

CALIBRATION REPORT FORM 12723

Cylinder: 250 tons capacity, 8" stroke, Serial No. R165
Gauge: 6,000 PSI rating, 6" dial dia., Serial No. BA6994-1

NOTICE: Calibration Reports prepared by Richard Dudgeon, Inc. are submitted on a confidential basis and the data contained therein is our and our customer's proprietary information. Such reports may not be used or copied by others without the express written permission of Richard Dudgeon, Inc. and the customer.

Dudgeon Order No. L 3053 Order Date 6/19/73
Customer Name GUILD MOULTON CORP. Order No. 7502
Date of Test 6/26/73 Test Performed by A.D. HAIGHT
Test Performed in 400 Ton Load Frame, Serial No. 1895
Output measured by 300 Ton Load Cell Set, Serial No. C3/CMM7311

Test Method: Cylinder pressure increased in even increments at slow rate by hydraulic pump. Output force of cylinder read by Load Cell on test machine.

OUTPUT FORCE OF HYDR. CYL.		HYDRAULIC GAUGE READINGS IN PSI AT FOLLOWING RAM EXTENSIONS			
TONS	POUNDS	2 INCHES	3 INCHES	4 INCHES	[illegible] INCHES
20		625	625	625	625
40		1075	1100	1100	1100
60		1575	1600	1600	1600
80		2100	2125	2100	2100
100		2625	2650	2625	2625
120		3125	3150	3150	3150
140		3625	2650	3650	3650
160		4125	4150	4150	4150
180		4650	4650	4675	4650
200		5150	5150	5150	5150
220		5650	5650	5650	5650

PILE LOAD TEST DATA SHEET — STATIC LOAD TEST — Raamot Associates

Project BRIDGE 12, FISH 72-5, FARC 72-151 — Date Pile Driven JUL 9, 1973 — Date Pile Concreted —
Location NEAR HARPURSVILLE, N.Y. — Owner NYS
Engineer NYS DEPT. OF TRANSPORTATION — Contractor GUILD MOULTON CONSTRUCTION CO.
Pile Type 12BP53 — Design Load 47 TONS
Pile No. 164 — Pile Length 25 FT BELOW GRADE, PILE TIP EL. = 930.33, PILE BUTT EL. = 957.20, PILE LENGTH = 26.87 FT.

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELL-TALE IN.	5 NE TELL-TALE IN.	6 WIRE-SCALE 64'S-IN.	Settlement AVG. DIALS IN.	WIRE-SCALE IN.	Remarks 72°
JUL 16	1050	0	0	0	30115	0	0.096	0.321	1.601	0.040	0.112	4 58/64	0.000	0	LOAD CELL "5"
	1052	2	708	23.5	30335	24.2	0.113	0.350	1.569	0.049	0.121	4 56/64	0.026	2/64	FACTOR = 7.84
	1054	4					0.115	0.351	1.572	0.050	0.122	4 55/64	0.026	3/64	
	1058	8					0.115	0.352	1.572	0.050	0.122	4 55/64	0.026	3/64	#4 SW TELL-TAL
	1105	15					0.115	0.352	1.572	0.050	0.123	4 55/64	0.026	3/64	1" Ø REINFRACING
	1120	30					0.115	0.352	1.572	0.051	0.123	4 55/64	0.026	3/64	BAR, BOTTOM IS
	1130	30 SEC	1275	47.0	30476	46.0	0.145	0.382	1.536	0.058	0.137	4 54/64	0.058	4/64	20" ABOVE PILE
	1131	1 MIN					0.144	0.382	1.536	0.058	0.137	4 54/64	0.058	4/64	TIP.
	1132	2					0.146	0.384	1.534	0.059	0.137	4 54/64	0.060	4/64	
	1134	4					0.146	0.384	1.534	0.059	0.138	4 54/64	0.060	4/64	#5 NE TELL-TA
	1138	8					0.146	0.384	1.534	0.059	0.138	4 54/64	0.060	4/64	2" Ø PIPE, BOTT
	1145	15					0.146	0.384	1.534	0.059	0.139	4 54/64	0.060	4/64	IS 9' ABOVE OTHE
	1204	34					0.147	0.384	1.534	0.059	0.139	4 54/64	0.060	4/64	TELL-TALE TIP.
	1206	0	708	23.5	30322	26.4	-	-	-	-	-	-			
		30 SEC					0.129	0.366	1.554	0.053	0.131	4 54/64	0.042	4/64	
		1 MIN					0.129	0.366	1.553	0.053	0.131	4 54/64	0.042	4/64	
		2					0.129	0.366	1.553	0.053	0.131	4 54/64	0.042	4/64	
		4					0.129	0.366	1.554	0.053	0.131	4 54/64	0.042	4/64	
		8					0.129	0.365	1.554	0.053	0.131	4 54/64	0.041	4/64	
		15					0.129	0.365	1.554	0.053	0.131	4 54/64	0.041	4/64	
		30					0.129	0.365	1.554	0.053	0.131	4 54/64	0.041	4/64	
	12:35	0	0	0	30115	0	-	-	-	-	-	-			
		30 SEC					0.102	0.327	1.597	0.042	0.116	4 55/64	0.005	3/64	

Inspector R. HELLER + E. MOSLEY

PILE LOAD TEST DATA SHEET — FISH 72-5 — STATIC LOAD TEST — Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings: 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELL-TALE IN.	5 NE TELL-TALE IN.	6 WIRE SCALE 64'S-IN	Settlement: AVG. DIALS IN.	WIRE SCALE IN.	Remarks
6/16	12:34	1 MIN	0	0		0	0.102	0.327	1.598	0.041	0.115	4 55/64	0.005	3/64	
		2					0.101	0.327	1.598	0.041	0.115	4 56/64	0.005	2/64	
		4					0.101	0.327	1.599	0.041	0.115	4 57/64	0.004	1/64	
		8					0.101	0.327	1.599	0.041	0.115	4 57/64	0.004	1/64	
		15					0.101	0.327	1.599	0.041	0.115	4 57/64	0.004	1/64	
		30					0.100	0.326	1.599	0.041	0.115	4 57/64	0.004	1/64	75°
													0.004		AT 13:30 DIALS
	1345	-	0	0	0	0	0.100	0.326	0.116	1.746	0.115	4 57/64	~~0.004~~	1/64	3 & 4 WERE
	1350½	3½ SEC	708	23.5	30310	24.8	0.125	0.361	0.136	1.738	0.126	4 55/64	0.030	3/64	SWITCHED TO
	1351	1 MIN					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	MAKE SETT. OF PI
	1352	2					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	BUTT EASIER TO
	1354	4					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	CALCULATE IN TH
	1358	8					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	FIELD - UNDER A
	1405	15					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	LOAD CONDITIONS
	1420	30					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	
	1435	45					0.126	0.361	0.136	1.738	0.127	4 55/64	0.031	3/64	
	1445	0	1275	47.0	30420	46.5	-	-	-	-	-	-	-	-	
	1445½	30 SEC					0.154	0.391	0.164	1.729	0.140	4 53/64	0.059	5/64	
	1446	1 MIN					0.155	0.391	0.164	1.728	0.140	4 53/64	0.060	5/64	
	1447	2					0.155	0.391	0.164	1.728	0.140	4 53/64	0.060	5/64	
	1449	4					0.155	0.391	0.165	1.728	0.141	4 53/64	0.060	5/64	
	1453	8					0.154	0.392	0.165	1.727	0.141	4 53/64	0.060	5/64	
	1500	15					0.155	0.392	0.165	1.727	0.141	4 53/64	0.060	5/64	
	1515	30					0.155	0.392	0.165	1.727	0.141	4 53/64	0.060	5/64	
	1518	0	1570	58.8	30578	59.0	-	-	-	-	-	-	-	-	
	1518½	30 SEC					0.172	0.409	0.182	1.722	0.151	4 52/64	0.077	6/64	
	1519	1 MIN					0.172	0.409	0.182	1.722	0.151	4 52/64	0.077	6/64	
	1520	2					0.173	0.409	0.183	1.721	0.150	4 52/64	0.078	6/64	
	1522	4					0.173	0.409	0.183	1.721	0.150	4 52/64	0.078	6/64	
	1526	8					0.173	0.410	0.183	1.720	0.151	4 52/64	0.078	6/64	

Inspector R. HELLER + E. MOSLEY

PILE LOAD TEST DATA SHEET — Fish Pier — STATIC LOAD TEST — Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 West Dial in.	2 SE Dial in.	3 NE Dial in.	4 SW Tell-tale in.	5 NE Tell-tale in.	6 Wire Scale 64's in.	Settlement Avg. Dials in.	Wire Scale in.	Remarks
4/16	1533	15	1570	58.8	30578	59.0	0.174	0.410	0.183	1.720	0.151	4 52/64	.079	6/64	
	1548	30					0.174	0.410	0.183	1.720	0.151	4 52/64	.079	6/64	
	1551	0	1865	70.6	30669	70.6	0.189	0.426	0.200	1.716	0.158	4 51/64	.095	7/64	
	1551½	30 sec					0.191	0.427	0.202	1.714	0.159	4 51/64	.096	7/64	
	1552	1 min					0.191	0.427	0.202	1.714	0.159	4 51/64	.096	7/64	
	1553	2					0.192	0.427	0.202	1.714	0.160	4 51/64	.097	7/64	
	1555	4					0.192	0.429	0.202	1.713	0.160	4 51/64	.097	7/64	
	1559	8					0.193	0.429	0.203	1.713	0.161	4 51/64	.098	7/64	
	1606	15					0.193	0.429	0.203	1.713	0.161	4 51/64	.098	7/64	
	1621	30					0.193	0.429	0.203	1.713	0.162	4 51/64	.098	7/64	
	1625	0	2160	82.3	30763	82.1	0.208	0.446	0.221	1.708	0.169	4 49/64	.115	9/64	
	1625½	30 sec					0.210	0.448	0.222	1.706	0.171	4 49/64	.116	9/64	
	1626	1 min					0.211	0.448	0.223	1.705	0.172	4 49/64	.117	9/64	
	1627	2					0.212	0.449	0.223	1.705	0.172	4 49/64	.118	9/64	
	1629	4					0.213	0.450	0.224	1.704	0.173	4 49/64	.119	9/64	
	1633	8					0.214	0.451	0.225	1.704	0.173	4 49/64	.120	9/64	
	1640	15					0.214	0.451	0.225	1.704	0.174	4 49/64	.120	9/64	
	1655	30					0.214	0.451	0.226	1.704	0.175	4 49/64	.120	9/64	
	1700	0	2467	94.0	30856	94.5	0.231	0.470	0.243	1.698	0.182	4 49/64	.138	9/64	73°
	1700½	30 sec					0.234	0.471	0.245	1.696	0.184		.140		
	1701	1 min					0.234	0.471	0.246	1.695	0.185		.140		
	1702	2					0.235	0.472	0.247	1.695	0.186		.141		
	1704	4					0.235	0.472	0.247	1.695	0.186		.141		
	1708	8					0.236	0.472	0.248	1.694	0.186	4 48/64	.142	10/64	
	1715	15					0.236	0.473	0.248	1.694	0.187		.142		
	1730	30					0.237	0.474	0.249	1.693	0.189		.143		
	1745	45					0.238	0.474	0.249	1.693	0.189		.143		
	1748	0	1865	70.6	30700		0.220	0.456	0.230	1.699	0.182		.125		
	1748½	30 sec					0.219	0.455	0.230	1.700	0.182		.124		
	1749	1 min					0.219	0.455	(0.129) 0.229	1.700	0.182	4 49/64	.124	9/64	

Inspector R. Heller & E. Mosley

PILE LOAD TEST DATA SHEET — FISH 72 — STATIC LOAD TEST — Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings: 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELL-TALE IN.	5 NE TELL-TALE IN	6 WIRE SCALE 64'S IN.	Settlement:	AVG DIALS IN.	WIRE SCALE IN	Remarks
01.16	1750	2 MIN					0.219	0.455	0.230	1.700	0.182			.124		
		4					0.218	0.454	0.229	1.700	0.182			.123		
		8					0.218	0.454	0.229	1.700	0.182			.123		
		15					0.218	0.454	0.229	1.700	0.182	4 49/64		.123	9/64	
		30					0.218	0.454	0.229	1.700	0.182			.123		
	1824	0	1275	47.0	30518		0.191	0.426	0.201	1.707	0.170			.096		
		30 SEC					0.191	0.426	0.201	1.707	0.170			.096		
		1 MIN					0.191	0.426	0.201	1.707	0.170			.096		
		2					0.191	0.426	0.201	1.707	0.170			.096		
		4					0.191	0.426	0.201	1.708	0.170			.096		
		8					0.190	0.426	0.200	1.708	0.170	4 50/64		.095	8/64	
		15					0.190	0.426	0.200	1.708	0.170			.095		
		30					0.190	0.426	0.200	1.708	0.170			.095		
	1858	0	710	23.5	30343		0.160	0.390	0.168	1.716	0.155			.064		
	1858½	30 SEC					0.158	0.393	0.168	1.718	0.155			.063		
	1859	1 MIN					0.158	0.392	0.168	1.718	0.155			.063		
	1900	2					0.158	0.392	0.167	1.718	0.154			.062		
	1902	4					0.158	0.392	0.167	1.719	0.154			.062		
	1906	8					0.158	0.392	0.167	1.719	0.154			.062		
	1913	15					0.157	0.392	0.167	1.719	0.154			.062		
	1928	30					0.160	0.395	0.170	1.715	0.156	4 52/64		.065	6/64	PRESSURE SLIGHTLY HI THEN 710
	1930	0	0	0	30129	0	0.121	0.348	0.132	1.731	0.135			.023		
	1930½	30 SEC					0.120	0.347	0.131	1.733	0.134			.022		
	1931	1 MIN					0.120	0.347	0.130	1.733	0.134			.022		
	1932	2					0.119	0.346	0.130	1.733	0.134			.021		
	1934	4					0.119	0.346	0.130	1.733	0.134	4 54/64		.021	9/64	
	1938	8					0.119	0.346	0.130	1.733	0.134			.021		
	1945	15					0.118	0.345	0.129	1.734	0.133			.020		
	2000	30					0.117	0.344	0.128	1.735	0.131			.019		74°
	2015	45					0.116	0.342	0.127	1.736	0.131			.018		72°

Inspector R. HELLER + E. MOSLEY

PILL LOAD TEST DATA SHEET FISH 72-5 STATIC LOAD TEST Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 West Dial In.	2 SE Dial In.	3 NE Dial In.	4 SW Tell-Tail In.	5 NE Tell-Tail In	6 Wire Scale 64's In	Settlement Avg Dials In	Wire Scale In	Remarks
Jul 16	2030	1 HR	0	0	30129	0	0.115	0.341	0.126	1.727	0.131		.017		
	2045	1 1/4 HR					0.113	0.339	0.124	1.739	0.128	4 54/64	.015	4/64	71°
	2100	1 1/2 HR					0.112	0.339	0.124	1.740	0.127		.015		
	2102	0	710.0	23.5	30129		0.137	0.372	0.144	1.729	0.139	4 54/64	.041	4/64	
	21:02 1/2	30 sec					0.137	0.372	0.144	1.729	0.139		.041		
	21:03	1 min.					0.137	0.373	0.145	1.728	0.139		.041		70°
	21:05	2					0.138	0.373	0.145	1.728	0.139	4 54/64	.042	4/64	
	21:06	4					0.138	0.374	0.145	1.727	0.139		.042		NOTE: #4 RDGS.
	21:10	8					0.138	0.374	0.145	1.727	0.139		.042		2/34 THROUGH 2
	21:17	15					0.138	0.374	0.145	1.727	0.139		.042		APPEAR TO BE
	21:32	30					0.139	0.374	0.145	1.728	0.140		.042		INCORRECT
	21:34	0	1275	47	30487		0.165	0.403	0.172	1.712	0.152		.070		
	21:34 1/2	30 sec.					0.167	0.403	0.173	1.712	0.153		.071		
	21:35	1 min.					0.167	0.404	0.174	1.713	0.154	4 52/64	.071	6/64	
	21:36	2					0.167	0.405	0.174	1.713	0.154		.072		
	21:38	4					0.167	0.405	0.174	1.714	0.154		.072		
	21:42	8					0.167	0.405	0.174	1.714	0.154		.072		
	21:49	15					0.167	0.405	0.174	1.716	0.154	4 52/64	.072	6/64	70°
	22:04	30					0.167	0.405	0.174	1.716	0.154		.072		
	22:15	0	1865	70.5	30664		0.200	0.437	0.207	1.705	0.169		.104		
	22:15 1/2	30 sec.					0.201	0.439	0.208	1.704	0.169		.106		
	22:16	1 min.					0.201	0.439	0.208	1.704	0.169		.106		
	22:17	2			30664		0.201	0.439	0.208	1.704	0.169	4 49/64	.106	9/64	
	22:19	4					0.201	0.439	0.208	1.704	0.169		.106		
	22:23	8					0.202	0.439	0.208	1.704	0.169		.106		
	22:30	15					0.202	0.439	0.208	1.704	0.169		.106		69°
	23:00	30					0.202	0.439	0.208	1.704	0.170		.106		
	23:04	0	2470	94	30847		0.236	0.473	0.244	1.692	0.187	4 48/64	.141	10/64	
	23:04 1/2	30 sec					0.236	0.474	0.244	1.692	0.187		.141		
	23:05	1					0.237	0.474	0.244	1.692	0.187		.141		69°

Inspector M. Goldberg Sheet [illegible] of 10

PILE LOAD TEST DATA SHEET — Fish 72-5 — Static Load Test — Raamot Associates

Date	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL IN	2 SE DIAL	3 NE DIAL IN	4 SW TELL-TAIL IN	5 NE TELL TAIL IN	6 WIRE SCALE 64'S IN.	Settlement AVG DIALS IN	WIRE SCALE IN	Remarks
1973															
July 16	23:06	2	2467.5	94	30845		0.237	0.475	0.244	1.692	0.188		0.142		
	23:08	4					0.237	0.475	0.244	1.692	0.188		0.142		
	23:12	8					0.238	0.476	0.245	1.691	0.189		0.143		
	23:19	15					0.239	0.476	0.245	1.690	0.189	4 47/64	0.143	11/64	
	23:34	30					0.239	0.476	0.246	1.690	0.189		0.143		69°
	23:49	45					0.240	0.476	0.246	1.688	0.189		0.144		
17	24:04	60					0.240	0.476	0.246	1.689	0.189		0.144		
	24:19	75					0.240	0.477	0.247	1.689	0.190		0.144		64°
	24:34	90					0.240	0.477	0.247	1.689	0.190		0.144		
	24:49	105					0.240	0.477	0.247	1.689	0.190		0.144		
	01:04	2HR.	"	"			0.240	0.477	0.247	1.689	0.190	4 47/64	0.144	11/64	63°
	04:04	5 HR.	"	"	30840		0.240	0.477	0.247	1.689	0.190		0.144		60°
	07:04	8 HR					0.240	0.478	0.247	1.689	0.190	4 47/64	0.145	11/64	58°
	10:04	11 HR.					0.239	0.476	0.246	1.690	0.190	4 45/64	0.143	12/64	63°
	13:04	14 HR					0.240	0.477	0.246	1.690	0.190	4 44/64	0.144	14/64	72°
	16:04	17 HR					0.241	0.478	0.247	1.689	0.191	3 58/64	0.145	14/64	76° MIRROR RESET
	19:04	20 HR			30843		0.245	0.483	0.251	1.690	0.195	3 56/64	0.149	16/64	32° SUN DIRECT
	22:04	23 HR					0.245	0.481	0.249	1.691	0.192	3 54/64	0.147	15/64	ON JACK 17:30
	23:04	24 HR			30832		0.242	0.480	0.249	1.692	0.192	3 54/64	0.147	18/64	03:30 20:00
	23:10	0	1865	70.5			0.226	0.462	0.232	1.696	0.186		0.130		65° @ 23:00
	23:10½	30 sec.					0.226	0.462	0.232	1.697	0.185		0.130		
	23:11	1 min					0.226	0.462	0.232	1.697	0.185		0.130		
	23:12	2			30688		0.226	0.462	0.232	1.697	0.185		0.130		64°
	23:14	4					0.226	0.462	0.232	1.696	0.185	3 59/64	0.130	13/64	
	23:18	8					0.225	0.462	0.232	1.696	0.185		0.129		
	23:25	15					0.225	0.462	0.232	1.697	0.185		0.129		
	23:30	30					0.225	0.462	0.232	1.697	0.185		0.129		
	23:45	0	1275	47			0.197	0.433	0.203	1.704	0.175	3 44/64	0.101	11/64	64°
	23:45½	30 sec.					0.197	0.433	0.203	1.704	0.175		0.101		
	23:46	1 min					0.196	0.433	0.203	1.704	0.174		0.100		

Inspector M. Goldberg

Sheet 6 of 10

PILE LOAD TEST DATA SHEET   FISH 72-5   STATIC LOAD TEST   Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELLTALE IN.	5 NE TELLTALE IN.	6 WIRE-SCALE 64THS IN	Settlement	[illegible] DIAL IN.	[illegible] IN.	Remarks
July 17	23:47	2	1275	47			0.195	0.432	0.202	1.727	0.173			0.099		
	23:49	4					0.195	0.432	0.202	1.704	0.173			0.099		
	23:52	8			30407		0.195	0.432	0.202	1.704	0.173	36¹/64		0.099	11/64	[illegible]
	24:00	15			-		0.195	0.432	0.202	1.704	0.173			0.099		
July 18	24:15	30			30406		0.195	0.432	0.202	1.704	0.173			0.099		
	24:20	0	710.0	23.5			0.163	0.399	0.169	1.716	0.158			0.067		
	24:20	30 Sec.					0.163	0.399	0.169	1.716	0.158			0.067		
	24:21	1 min.					0.163	0.399	0.169	1.716	0.158			0.067		
	24:22	2					0.163	0.399	0.169	1.716	0.158			0.067		
	24:24	4			30333		0.163	0.399	0.169	1.716	0.158	36³/64		0.067	9/64	61°
	24:28	8					0.163	0.399	0.169	1.716	0.158			0.067		
	24:35	15					0.163	0.399	0.169	1.716	0.158			0.067		
	24:50	30					0.163	0.399	0.169	1.716	0.158			0.067		
	24:50	0	0	0			0.1[illegible]	0.346	0.129	1.735	0.134			0.022		
	24:5[illegible]	30 sec.					0.119	0.345	0.128	1.736	0.133			0.020		
	24:5[illegible]	[illegible]					0.119	0.344	0.127	1.738	0.132			0.020		
	24:5[illegible]	2					0.118	0.344	0.127	1.738	0.132			0.019		
	24:58	4					0.118	0.344	0.127	1.738	0.132			0.019		61°
	1:02	8			30113		0.117	0.344	0.127	1.739	0.132	1⁰²/64		0.019	6/64	
	1:09	15					0.117	0.342	0.126	1.739	0.131			0.018		
	1:24	30					0.117	0.342	0.126	1.739	0.131			0.018		60°
	8:35	8hr.-20min.	0	0	30106	0	0.114	0.339	0.123	1.741	0.127	4[illegible]/64		0.015	6/64	
	0915	9 hrs.	0	0	30104	0	"	"	"	1.761	"	"		"		[illegible]
																[illegible]
																[illegible]
																[illegible]
																[illegible]
																[illegible]

Inspector M. Goldberg   Sheet [illegible] of [illegible]

PILE LOAD TEST DATA SHEET — CONSTANT RATE OF PENETRATION TEST — Raamot Associates

Date '73	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELL-TALE IN.	5 NE TELL-TALE IN.	6 WIRE SCALE 545 IN.	Settlement S=?	ADG. DIALS (IN.)	WIRE SCALE (IN.)	Remarks
7-18	0917	0	0	0	30104	0	0.112	0.337	0.123	1.761	0.125	4 1/64		0	0	PILE PULLED 7
	0918	1	250	8.0	30187	10.6	0.119	0.348	0.129	1.759	0.128	4 1/64		.008	0	SETTLEMENT = 0+
	0919	2	720	29.0	30300	25.0	0.135	0.367	0.144	1.753	0.136	4 9/64		.025	1/64	= .013"
	0920	3	975	38.7	30377	34.8	0.149	0.383	0.158	1.748	0.143	3 63/64		.039	2/64	
	0921	4	1220	48.8	30447	43.9	0.162	0.396	0.170	1.743	0.149	3 63/64		.052	3/64	
	0922	5	1460	58.5	30497	50.1	0.171	0.405	0.180	1.740	0.154	3 63/64		.061	3/64	
	0923	6	1550	61.1	30517	56.5	0.181	0.415	0.189	1.736	0.158	3 64/64		.071	4/64	
	0924	7	1725	65.0	30597	62.9	0.190	0.424	0.199	1.733	0.163	3 64/64		.080	5/64	
	0925	8	1910	72.9	30653	69.9	0.200	0.435	0.208	1.729	0.168	3 64/64		.091	5/64	
	0926	9	2100	80.0	30707	76.9	0.210	0.445	0.220	1.726	0.173	3 63/64		.101	6/64	
	0927	10	2250	85.7	30756	83.1	0.220	0.455	0.230	1.722	0.179	3 63/64		.111	6/64	
	0928	11	2415	92.0	30810	90.1	0.230	0.464	0.239	1.719	0.183	3 63/64		.120	6/64	
	0929	12	2575	98.1	30856	95.9	0.240	0.474	0.249	1.715	0.188	3 63/64		.130	7/64	
	1000	13	2750	104.8	30909	102.7	0.250	0.485	0.260	1.711	0.194	3 63/64		.141	9/64	
	1001	14	2895	110.3	30956	108.7	0.261	0.494	0.271	1.706	0.200	3 63/64		.151	10/64	
	1002	15	3015	114.9	30990	113.0	0.269	0.505	0.280	1.702	0.205	3 63/64		.161	10/64	
	1003	16	3155	120.1	31035	118.8	0.280	0.517	0.291	1.696	0.212	3 63/64		.172	11/64	
	1004	17	3250	124.0	31065	122.6	0.289	0.526	0.300	1.692	0.218	3 64/64		.181	11/64	
	1005	18	3390	129.6	31107	127.9	0.300	0.538	0.312	1.686	0.226	3 64/64		.193	11/64	
	1006	19	3490	133.6	31140	132.1	0.311	0.548	0.323	1.679	0.233	3 63/64		.203	13/64	
	1007	20	3600	138.0	31171	136.1	0.320	0.558	0.332	1.674	0.240	3 63/64		.213	13/64	
	1008	21	3690	141.6	31203	140.2	0.331	0.570	0.344	1.666	0.249	3 63/64		.224	14/64	
	1009	22	3750	144.0	31216	141.8	0.339	0.577	0.353	1.661	0.255	3 64/64		.232	14/64	
	1010	23	3850	148.0	31255	146.8	0.351	0.589	0.365	1.654	0.262	3 64/64		.244	15/64	
	1011	24	3900	150.0	31266	148.2	0.360	0.598	0.372	1.649	0.271	3 64/64		.253	16/64	
	1012	25	4000	154.0	31294	151.8	0.371	0.610	0.382	1.644	0.274	3 64/64		.264	17/64	
	1013	26	4000	154.0	31295	151.9	0.370	0.616	0.389	1.639	0.279	3 64/64		.270	17/64	
	1014	27	4100	158.0	31327	156.0	0.381	0.650	0.403	1.625	0.294	3 64/64		.284	18/64	
	1015	28	4125	159.0	31338	157.4	0.390	0.639	0.412	1.618	0.304	3 64/64		.293	18/64	
	1016	29	4150	160.0	31340	157.7	0.400	0.649	0.421	1.610	0.313	3 64/64		.302	19/64	

Inspector E.T. Worley

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PILE LOAD TEST DATA SHEET — CONSTANT RATE OF PENETRATION TEST — Raamot Associates

Date 1973	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 West Dial In.	2 SE Dial In.	3 NE Dial In.	4 SW Tell-Tale In.	5 NE Tell-Tale In.	6 Wire-Scale 64's In.	Settlement Avg Dial (In.)	Settlement Wire Scale (In.)	Remarks
6/18	1017	30	4200	162.0	31361	160.3	0.421	2.659	0.532	1.661	0.731	3 27/64	.313	19/64	
	1018	31	4250	164.0	31375	162.1	0.431	2.662	0.843	1.593	0.731	3 29/64	.329	21/64	
	1019	32	4250	164.0	31375	162.1	0.439	2.677	0.850	1.587	0.731	3 29/64	.331	21/64	
	1020	33	4275	165.2	31393	164.4	0.450	2.687	0.861	1.574	0.741	3 30/64	.343	21/64	
	1021	34	4350	168.2	31434	165.8	0.461	2.700	0.878	1.567	0.752	3 32/64	.354	22/64	
	1022	35	4355	169.0	31446	166.8	0.476	2.709	0.882	1.559	0.762	3 32/64	.363	23/64	
	1023	36	4395	169.8	31472	166.8	0.486	2.715	0.891	1.551	0.771	3 33/64	.372	23/64	
	1024	37	4410	170.4	31482	168.1	0.490	2.729	0.901	1.542	0.776	3 34/64	.383	24/64	
	1025	38	4450	172.0	31435	169.8	0.501	2.744	0.913	1.533	0.787	3 34/64	.394	25/64	
	1026	39	4455	172.2	31437	170.0	0.510	0.750	0.922	1.523	0.797	3 35/64	.403	25/64	
	1027	40	4475	173.0	31457	170.0	0.519	0.758	0.931	1.515	0.811	3 35/64	.412	26/64	
	1028	41	4540	175.7	31454	172.2	0.532	0.771	0.944	1.515	0.824	3 36/64	.425	26/64	
	1029	42	4515	174.2	31450	171.7	0.539	0.778	0.951	1.477	0.832	3 36/64	.432	27/64	
	1030	43	4555	171.2	31465	173.6	0.551	0.791	0.963	1.476	0.844	3 37/64	.444	28/64	
	1031	44	4555	176.2	31465	173.6	0.560	0.799	0.972	1.478	0.853	3 37/64	.453	28/64	
	1032	45	4565	176.6	31465	173.6	0.569	0.809	0.982	1.469	0.861	3 37/64	.463	29/64	
	1033	46	4595	177.8	31476	175.0	0.577	0.819	0.992	1.460	0.870	3 38/64	.473	30/64	
	1034	47	4605	178.2	31480	175.5	0.590	0.829	1.002	1.450	0.881	3 38/64	.483	31/64	
	1035	48	4605	178.2	31479	175.4	0.599	0.839	1.012	1.441	0.889	3 38/64	.493	31/64	
	1036	49	4625	179.0	31489	176.7	0.610	0.850	0.622	1.431	0.899	3 39/64	.503	32/64	
	1037	50	4650	180.0	31493	177.2	0.620	0.861	0.633	1.422	0.910	3 39/64	.519	33/64	
	1038	51	4640	179.6	31500	178.1	0.631	0.871	0.643	1.412	0.919	3 39/64	.529	34/64	
	1039	52	4665	180.6	31498	177.6	0.641	0.878	0.650	1.405	0.926	3 39/64	.531	34/64	
	1040	53	4800	186.0	31540	183.2	0.665	0.895	0.677	1.392	0.950	3 41/64	.559	36/64	
	1041	54	4815	186.6	31563	186.1	0.715	0.940	0.720	1.352	0.991	3 42/64	.619	39/64	
	1042	55	4830	187.2	31571	187.1	0.755	0.976	0.762	1.318	1.026	3 43/64	.659	42/64	
	1043	56	4850	188.0	31546	186.5	0.775	1.000	0.782	1.297	1.045	3 43/64	.680	43/64	
	1044	57	4870	188.6	31572	187.2	0.796	1.019	0.803	1.277	1.065	3 44/64	.696	44/64	
	1045	58	4870	189.0	31573	187.2	0.816	1.045	0.824	1.255	1.086	3 45/64	.717	45/64	
	1046	59	4910	190.0	31575	187.6	0.838	1.062	0.845	1.234	1.107	3 45/64	.734	46/64	

Inspector E. T. Mosley

Sheet 2 of 2

PILE LOAD TEST DATA SHEET — Constant Rate of Penetration Test — Raamot Associates

Date	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 West Dial In.	2 SE Dial In.	3 NE Dial In.	4 SW Tell-Tale In.	5 NE Tell-Tale In.	6 Wire-Scale 64'sIn.	Settlement Avg. Dial (In.)	Wire Scale (In.)	Remarks
1/8	1047	50	4875	189.0	31575	187.6	0.850	1.091	[illegible]	[illegible]	[illegible]	3 12/64	.749	47/64	
	1048	61	4915	190.6			0.864	1.106	0.878	1.192	0.743	3 16/64	.759	49/64	
	1049	62	4895	189.8			0.873	1.115	0.886	1.183	0.753	3 17/64	.767	49/64	
	1050	63	4910	190.4			0.884	1.127	0.898	1.172	0.764	3 15/64	.779	50/64	
	1051	64	4910	190.4			0.894	1.137	0.908	1.162	0.774	3 15/64	.788	50/64	
	1052	65	4900	190.0			0.901	1.144	0.915	1.155	0.781	3 14/64	.796	51/64	
	1053	66	4895	189.8			0.907	1.149	0.920	1.150	0.786	3 14/64	.801	51/64	
	1054	67	4895	189.8			0.912	1.155	0.926	1.145	0.791	3 13/64	.807	51/64	
	1055	68	4895	189.8			0.917	1.160	0.931	1.140	0.796	3 13/64	.812	52/64	
	1057	69	4900	190.0			0.923	1.165	0.937	1.134	0.802	3 13/64	.818	52/64	
	1057	70	4905	190.2			0.929	1.172	0.943	1.128	0.808	3 12/64	.824	53/64	
	1058	71	4905	190.2			0.935	1.178	0.949	1.122	0.813	3 12/64	.830	53/64	
	1059	72	4910	190.4			0.941	1.184	0.955	1.112	0.819	3 12/64	.836	53/64	
	1100	73	4910	190.4		187.6	0.946	1.189	0.960	1.111	0.824	3 5/64	.841	53/64	
	1117	90	4900	190.0	31579	188.1	0.954	1.199	1.008	1.064	0.873	3 9/64	.876	56/64	
	1119	0	3675	141.0	31242	145.2	0.959	1.197	0.970	1.069	0.862	3 7/64	.851	54/64	
	1125	6	3685	141.4	31253	146.6	0.955	1.195	0.967	1.074	0.859	3 11/64	.849	54/64	
	1129	10	3675	141.0	31256	146.9	0.956	1.195	0.968	1.073	0.859	3 11/64	.849	54/64	
	1134	15	3675	141.0	31246	145.7	0.955	1.194	0.968	1.073	0.859	3 11/64	.849	54/64	
	1136	0	2450	93.2	30870	97.7	0.895	1.130	0.907	1.090	0.834	3 5/64	.787	50/64	
	1141	5	2455	93.4	30874	98.2	0.893	1.128	0.905	1.091	0.832	3 13/64	.785	50/64	
	1146	10	2455	93.4	30874	98.2	0.893	1.128	0.905	1.091	0.831	3 14/64	.785	51/64	
	1151	15	2475	94.3	30875	98.3	0.893	1.128	0.905	1.092	0.831	3 14/64	.785	51/64	
	1153	0	1225	45.0	30488	49.0	0.817	1.052	0.829	1.120	0.794	3 16/64	.709	49/64	
	1158	5	1225	45.0	30487	48.9	0.815	1.049	0.827	1.122	0.791	3 20/64	.706	45/64	
	1203	10	1225	45.0	30489	49.1	0.814	1.048	0.826	1.122	0.791	3 26/64	.705	45/64	
	1208	15	1255	46.2	30489	49.1	1.814	1.048	0.826	1.133	0.790	3 26/64	.705	45/64	
	1209	0	0	0	30107	0.4	0.712	0.943	0.735	1.173	0.724	3 34/64	.602	39/64	
	1326	115	0	0	30115	1.4	0.705	0.936	0.717	1.179	0.717	3 23/64	.598	38/64	

Inspector E.T. Mosley

SURVEYOR'S LEVEL DATA*

("BS" IS SPIKE IN TREE, EL. 955.0)

DATE 1973	TIME	LOAD	BS	REF. BEAM WEST	REF. BEAM EAST	CRIBBING NORTH	CRIBBING SOUTH	
JUL 16	1045	0	3.135	1.866	1.845	1.285	1.582	
	[illegible]	47.0	3.110	1.850	1.840	1.282	1.580	
	[illegible]	0	3.080	1.855	1.840	1.282	1.581	
	1900	94	3.110	1.860	1.840	1.284	1.580	
	2000	0	3.110	1.858	1.840	1.280	1.575	
	2210	47.0	3.109	1.847	1.820	1.272	1.560	
	23:40	94	3.109	1.850	1.800	1.260	1.540	
JUL 17	23:00	94	3.109	1.850	1.830	1.274	1.575	TE...
JUL 18	0:14	47.0	3.109	1.849	1.830	1.272	1.575	DIFF. ?
	1:30	0	3.109	1.849	1.820	1.270	1.575	
	8:45	0	3.109	1.852	1.847	1.275	1.575	
	11:13	±190	3.109	1.865	1.860	1.290	1.575	CONTINUED PENETRATION
	14:10	0	3.102	1.859	1.839	1.290	1.589	Temp. 92°

* USING GUILD-MOULTON LEVEL

NEW YORK
BOSTON

RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY ETAI DATE 7-20-73 PROJECT BRIDGE 12, FISH 72-5 SHEET NO. 1 OF 1
CHKD. BY ____ DATE ____ SUBJECT LOAD TEST CYCLE TO CHECK JOB NO. ____
REVISED ____ MOVEMENT OF REFERENCE BEAM

SURVEYOR'S LEVEL DATA

TIME	JACK GAGE PSI	JACK LOAD TONS	WEST DIAL ON PILE BUTT IN.	LEVEL RDG. S. CRIB FT.	LEVEL RDG. N. CRIB FT.	LEVEL RDG. W. BEAM FT.	LEVEL RDG. E. BEAM FT.	LEVEL RDG. ON SW EDGE PILE PLATE FT.	BACK SIGHT ON SPIKE IN TREE-FT. (955.80)
1455	0	0	0.202	2.084	1.789	2.353	2.335	2.175	3.602
1500	1275	47	0.258	2.083	1.788	2.354	2.335	2.183	
1510	2470	94	0.337	2.078	1.787	2.353	2.336	2.187	
1525	3700	142	0.426	2.075	1.785	2.352	2.334	2.195	
1530	3700	142							3.600
1545	0	0	0.213	2.084	1.788	2.353	2.334	2.180	

NOTE: CERRETANI'S LEVEL USED FOR THESE READINGS, BUT GUILD-MOULTON LEVEL WAS ALSO CHECKED AND GAVE SIMILAR RESULTS.

RESULTS: ON APPLICATION OF THE 142^T LOAD THE FOLLOWING MOVEMENTS WERE OBSERVED:

SOUTH CRIB : 0.007 FT. RISE
NORTH CRIB : 0.002 FT. RISE
W. END REF. BEAM: 0.001 FT. DROP
E. END REF. BEAM: 0.001 FT. DROP

2ND CRP TEST

PILE LOAD TEST DATA SHEET

Raamot Associates

Project BRIDGE 12, FISH 72-5, FARC 72-151 Date Pile Driven JUL 9, 1973 Date Pile Concreted —
Location NEAR HARPURSVILLE, N.Y. Owner NYS
Engineer NYS DEPT. OF TRANSPORTATION Contractor GUILD MOUNTAIN CONSTRUCTION CORP.
Pile Type 12 BP 53 Design Load 47 TONS
Pile No. 164 Pile Length 26.87 FT., PILE BUTT EL. = 957.16

Date 1973	Time of Day	Elapsed Time (MIN.)	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL IN.	2 SE DIAL IN.	3 NE DIAL IN.	4 SW TELETALE IN.	5 —	6 --	Settlement	AVG. DIALS IN.		Remarks
Jul 23	1255	0	0	0	300136	0	0.103	0.139	0.277	0.203				0		
		1	550	176	30 0279	18.2	.115	.155	.300	.210				.017		
		2	750	25.3	0343	26.4	.127	.170	.312	.216				.030		
		3	975	34.7	0421	36.4	.141	.185	.326	.220				.044		
		4	1150	42.0	0469	42.5	.150	.194	.336	.226				.054		
		5	1300	48.0	0515	48.3	.160	.204	.346	.230				.064		
		6	1450	54.0	0576	56.1	.170	.214	.356	.236				.074		
		7	1680	63.2	0627	62.6	.182	.227	.370	.240				.087		
		8	1810	68.4	0668	67.9	.192	.236	.378	.243				.096		
		9	1975	75.0	0714	73.7	.202	.246	.389	.247				.106		
	1305	10	2075	79.0	0742	77.3	.210	.253	.396	.250				.113		
		11	2300	87.6	0819	87.1	.225	.268	.411	.256				.128		
		12	2420	92.2	0855	91.7	.234	.276	.420	.260				.137		
		13	2600	99.0	0911	98.9	.245	.288	.432	.264				.149		
		14	2740	104.9	0956	104.6	.255	.298	.441	.268				.158		
		15	2940	112.0	1020	112.8	.267	.311	.454	.273				.171		
		16	3100	118.2	1060	117.9	.277	.321	.465	.277				.181		
		17	3250	124.0	1107	123.9	.287	.332	.475	.282				.192		
		18	3350	128.0	1141	128.2	.296	.340	.483	.285				.200		
		19	3525	135.0	1198	135.5	.307	.353	.495	.290				.212		
	1315	20	3625	139.0	1228	139.3	.316	.361	.503	.294				.220		
		21	3750	144.0	1271	144.8	.326	.370	.513	.298				.230		
		22	3850	148.0	30 1298	148.2	.334	.379	.521	.302				.238		

Inspector E.T. MOOLEY

Sheet 1 of 3

PILE LOAD TEST DATA SHEET

2ND CRP TEST

Raamot Associates

Date	Time of Day	Elapsed Time	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL (in.)	2 SE DIAL (in.)	3 NE DIAL (in.)	4 SW TELL-TALE (in.)	5	6	Settlement AVG. DIALS (in.)	Remarks
973														
9-23		23	3950	152.0	30. 1330	152.3	.393	.387	.529	.307			.207	
		24	4075	157.0	1373	157.8	.354	.400	.542	.314			.259	
		25	4150	160.0	1393	160.3	.363	.409	.550	.320			.265	
		26	4250	164.0	1428	164.8	.374	.419	.561	.326			.278	
		27	4350	168.0	1449	167.5	.385	.432	.572	.335			.290	
		28	4400	170.0	1474	170.7	.395	.441	.581	.340			.299	
		29	4450	172.0	1483	171.8	.405	.451	.591	.349			.309	
	1325	30	4550	176.0	1513	175.6	.417	.464	.624	.358			.322	
		31	4580	177.2	1524	177.0	.427	.473	.612	.365			.331	
		32	4610	178.4	1533	178.2	.438	.484	.623	.375			.342	
		33	4675	181.0	1554	180.9	.448	.494	.634	.383			.352	
		34	4700	182.0	1554	180.9	.458	.504	.643	.392			.362	
		35	4750	184.0	1575	183.5	.468	.514	.654	.400			.372	
		36	4750	184.0	1577	183.8	.480	.526	.666	.411			.384	
		37	4790	185.6	1590	185.5	.490	.536	.675	.419			.394	
		38	4810	186.8	1603	187.1	.502	.547	.687	.430			.406	
		39	4825	187.4	1606	187.5	.512	.558	.697	.440			.416	
	1335	40	4830	187.6	1608	187.8	.520	.566	.704	.447			.424	
		41	4850	188.0	1614	188.5	.530	.576	.714	.456			.434	
		42	4900	190.0	1627	190.2	.540	.585	.724	.464			.443	
		43	4900	190.0	1627	190.2	.550	.596	.734	.474			.454	
		44	4950	192.0	1644	192.3	.561	.608	.744	.489			.465	
		45	4950	192.0	1647	192.7	.571	.618	.756	.494			.475	
		46	5000	194.0	1663	194.8	.583	.630	.768	.504			.487	
	1342	47	5000	194.0	1661	194.5	.597	.644	.781	.517			.501	48 MIN - 54 MIN LEVEL
	1350	55	4850	188.0	1610	188.0	.624	.670	.807	.545			.527	
		56	3275	141.0	1274	145.2	.582	.625	.766	.536			.485	75% LOAD
	1355	60	3700	142.0	1286	146.7	.582	.625	.766	.536			.485	
		65	3705	143.0	1288	146.9	.582	.625	.766	.536			.485	50% LOAD
		66	2480	94.5	30 0910	98.7	.521	.560	.703	.519			.422	

Inspector E.T. Mosley

Sheet 2 of 3

PILE LOAD TEST DATA SHEET

2ND [illegible] TEST

Raamot Associates

...te	Time of Day	Elapsed Time (MIN)	Jack Gage Rdg. Psi	Jack Load Tons	Load Cell Rdg.	Load Cell Tons	Settlement Readings 1 WEST DIAL (in.)	2 SE DIAL (in)	3 NE DIAL (in)	4 SW TELL TALE (in)	5	6	Settlement	AVG. DIALS (in.)		Remarks
1973																
24 23	1405	70	2505	95.4	30 .0926	100.8	.521	.560	.704	.519				.422		70-75 min. BACKE
		75	2475	94.3	.0911	98.8	.519	.558	.702	.518				.420		PRESSURE 75 psi
		79	—			—	.519	.558	.702	—				.420		
	1415	80	1225	43.0	.0529	50.1	.442	.482	.626	.492				.344		80-85 min BAC
		85	1225	43.0	.0529	50.1	.440	.480	.624	.489				.342		OFF PRESSURE 50
	1425	90	1225	43.0	.0527	49.8	.439	.480	.623	.488				.341		85-90 MIN BAC
		.91	0	0	.0139	.4	.341	.382	.517	.440				.240		OFF PRESSURE 2
	1600	FINAL 185	0	0.	.0148	1.5	.334	.370	.510	.430				.232		

Inspector E.T. MOSLEY

Sheet 3 of 3

NEW YORK
BOSTON

RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY ETM DATE 7-23-73 PROJECT BRIDGE 12, FISH 72-5 SHEET NO. 1 OF 3
CHKD. BY _____ DATE _____ SUBJECT SURVEY'S LEVEL DATA JOB NO. _____
REVISED _____ SYRACUSE BENCHMARK LEVEL _____

Rdg. No.	TIME	B.S. (7.5')	CRIBBING S	CRIBBING N	RR BEAM W	RR BEAM E	PILE NW	PILE SE
1	1230	7.945	6.436	6.140	6.697	6.676	6.496	6.522
2	1255	7.942						
3	1308-1313	7.943			6.697	6.676		
4	1318-1325	7.944			6.695	6.677		
5	1327-1326	7.942			6.696	6.677		
6	1338-1347	7.943			6.696	6.678		
7	1345-1353	7.943					6.542	6.566
8	1356-1402	7.943			6.696	6.677		
9	1407-1417	7.944			6.695	6.677		
10	1419-1428	7.944			6.697	6.677		
11	1430-1440	7.945			6.696	6.677		
12	1605-1624	7.947	6.440	6.144	6.697	6.677	6.516	6.540
13	1630	7.946						

NEW YORK
BOSTON

RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY [illegible] DATE 7-23-73 PROJECT BRIDGE 12, FISH 72-5 SHEET NO. 2 OF 3
CHKD. BY ____ DATE ____ SUBJECT [illegible] LEVEL [illegible] JOB NO. ____
REVISED ____ GUILD-1, BOULTON LEVEL

RDG. No.	TIME	B.S. (75')	CURBING S	CURBING N	REF. BEAM W	REF. BEAM E	PILE NW	PILE SE
1	1230	8.018	6.514	6.215	6.773	6.753	6.570	6.597
2	1258	8.017						
3	1303-1309	8.016			6.774	6.750		
4	1318-1325	8.017			6.773	6.752		
5	1327-1326	8.017			6.770	6.750		
6	1338-1344	8.015			6.769	6.750		
7	1345-1353	8.015					6.616	6.642
8	1356-1402	8.015			6.773	6.750		
9	1407-1414	8.014			6.772	6.750		
10	1418-1428	8.014			6.773	6.749		
11	1430-1440	8.018			6.770	6.750		
12	1605-1624	8.018	6.513	6.214	6.773	6.750	6.590	6.6[illegible]
13	1627	8.018						

NEW YORK
BOSTON

RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY ETM DATE 7-23-73 PROJECT SURVEYOR'S LEVEL DATA RESULTS SHEET NO. 3 OF 3
CHKD. BY _____ DATE _____ SUBJECT [illegible] RELATIVE TO [illegible] - JOB NO. _____
REVISED _____ SPACE IN TREE AT EL. 955.[illegible]

S.R. LEVEL	CRIBBING S	CRIBBING N	REF. BEAM W	REF. BEAM E	PILE NW	PILE SE
1	1.509	1.805	1.248	1.269	1.449	1.423
2						
3			1.246	1.267		
4			1.249	1.267		
5			1.246	1.265		
6			1.247	1.265		
7					1.401	1.377
8			1.247	1.266		
9			1.249	1.267		
10			1.247	1.267		
11			1.249	1.268		
12	1.507	1.803	1.250	1.270	1.431	1.407
13						

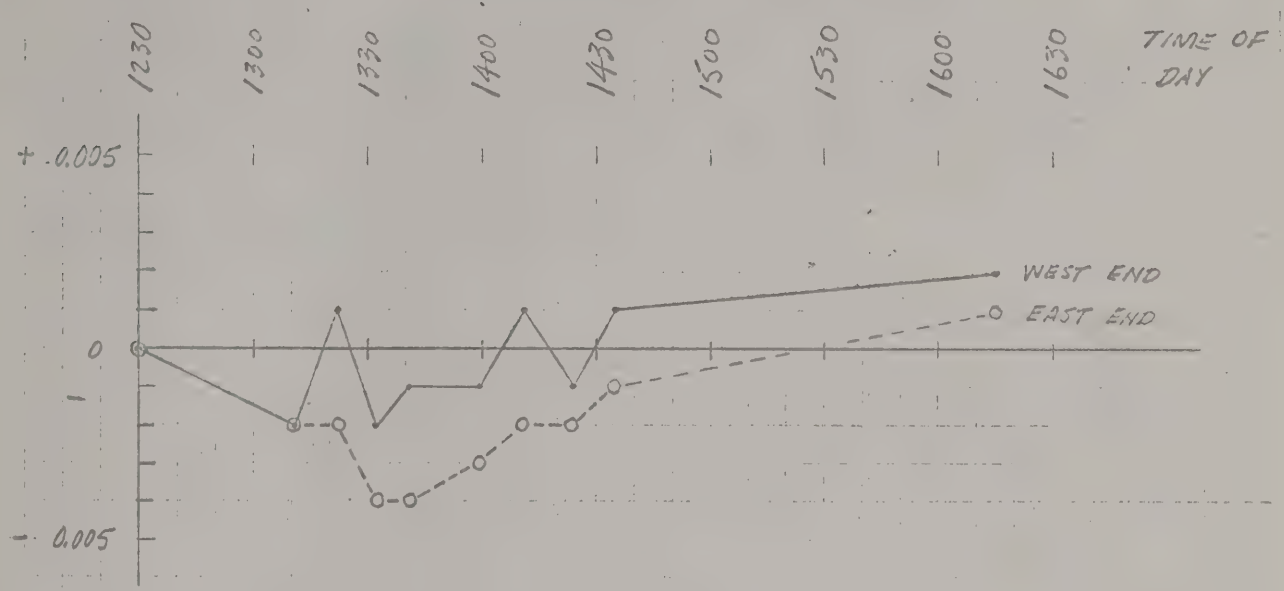
G.M. LEVEL						
1	1.504	1.803	1.245	1.265	1.448	1.421
2						
3			1.242	1.266		
4			1.244	1.265		
5			1.247	1.267		
6			1.246	1.265		
7					1.399	1.373
8			1.242	1.265		
9			1.242	1.264		
10			1.241	1.265		
11			1.248	1.268		
12	1.505	1.804	1.245	1.268	1.428	1.402
13						

NEW YORK
BOSTON

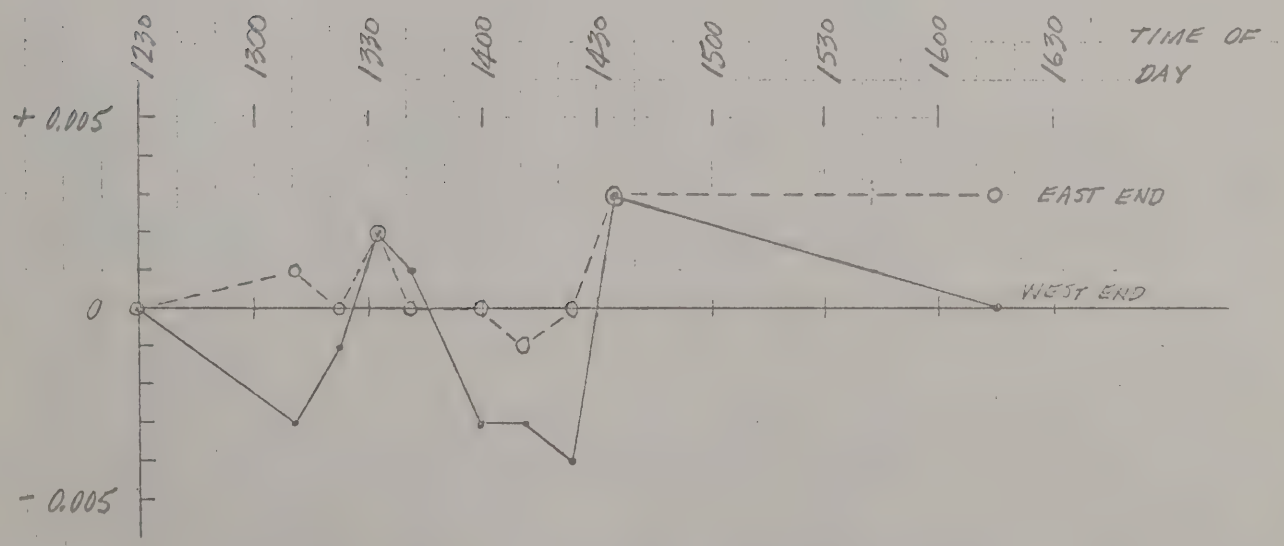
RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY ETM DATE 7-26-73 PROJECT BRIDGE 12, FISH 72-5 SHEET NO. ____ OF ____
CHKD. BY ____ DATE ____ SUBJECT RESULTS OF SURVEYORS LEVEL JOB NO. ____
REVISED ____ READINGS ON REFERENCE BEAM



RESULTS USING SYRACUSE BLUEPRINT LEVEL
DURING CRP TEST JULY 23, 1973.



RESULTS USING GUILD-MOULTON LEVEL
DURING CRP TEST JULY 23, 1973.

BD - 25 (2/65)

STATE OF NEW YORK
DEPARTMENT OF PUBLIC WORKS
DIVISION OF CONSTRUCTION

USING BASELINE FOR SOIL BORING LOCATIONS, PILE No. 164 IS AT STA. 786+00, RT. 58.5 FT.

PILE LOAD TEST OR RECORDED PILE DRIVING RECORD

(Strike out the one not used)

Date Driven 9 July 73 Type and Size of Pile HP 12 X 53 (if Wood, give species)

Time 12:30PM-1:00PM Pile No. 164 Design Load 47 Tons

Project Harpursville-Afton Int Rt 508 County Broom

Contract No. 935702 Fish 72-5 Bridge No. or Name Br # 12

S.H. No. ..... P.S.C. Case No. ..... Railroad .....

Make, Type and Number of Hammer Link Belt 520

Equivalent WH Energy 22,000 Ft-Lbs.* Measured Stroke, S.A. ..... Rated Strokes per Minute, D.A. 80-94

Weight of Pile or Mandrel 14.84 # Rated Strokes per Minute, S.A. .....

Ordered or Estimated Lengths 25' in Ground Total Length Placed in Leads 28

Cut-off Elevation = 956.33 Location in Structure EB West Abut

Depth of Point *	Blows per Foot	Recorded Strokes per Minute	Depth of Point *	Blows per Foot	Recorded Strokes per Minute	Depth of Point *	Blows per Foot	Recorded Strokes per Minute
0 - 2	20		54 - 55			103 - 104		
2 - 4	1	Wt. of Hammer	55 - 56			104 - 105		
4 - 6	1		56 - 57			105 - 106		
6 - 8	1		57 - 58			106 - 107		
8 - 10	1		58 - 59			107 - 108		
10 - 11	1		59 - 60			108 - 109		
11 - 12	↓		60 - 61			109 - 110		
12 - 13			61 - 62			110 - 111		
13 - 14	6		62 - 63			111 - 112		
14 - 15	12		63 - 64			112 - 113		
15 - 16	20	80	64 - 65			113 - 114		
16 - 17	25		65 - 66			114 - 115		
17 - 18	30		66 - 67			115 - 116		
18 - 19	25		67 - 68			116 - 117		
19 - 20	27		68 - 69			117 - 118		
20 - 21	26		69 - 70			118 - 119		
21 - 22	25		70 - 71			119 - 120		
22 - 23	24		71 - 72			120 - 121		
23 - 24 - 5	13		72 - 73			121 - 122		
24 - 25	12		73 - 74			122 - 123		
25 - 26	16		74 - 75			123 - 124		
26 - 27	12		75 - 76			124 - 125		
27 - 28	13		76 - 77			125 - 126		
28 - 29	15		77 - 78			126 - 127		
29 - 30	13		78 - 79			127 - 128		
30 - 31	11		79 - 80			128 - 129		
31 - 32	10		80 - 81			129 - 130		
32 - 33	8		81 - 82			130 - 131		
33 - 34	9		82 - 83			131 - 132		
34 - 35	9		83 - 84			132 - 133		
35 - 36	9		84 - 85			133 - 134		
36 - 37	8		85 - 86			134 - 135		
37 - 38	9		86 - 87			135 - 136		
38 - 39	9		87 - 88			136 - 137		
39 - 40	12		88 - 89			137 - 138		
40 - 41	10		89 - 90			138 - 139		
41 - 42	6	↓	90 - 91			139 - 140		
42 - 43			91 - 92			140 - 141		
43 - 44			92 - 93			141 - 142		
44 - 45			93 - 94			142 - 143		
45 - 46			94 - 95			143 - 144		
46 - 47			95 - 96			144 - 145		
47 - 48			96 - 97			145 - 146		
48 - 49			97 - 98			146 - 147		
49 - 50			98 - 99			147 - 148		
50 - 51			99 - 100			148 - 149		
51 - 52			100 - 101			149 - 150		
52 - 53			101 - 102					
53 - 54			102 - 103					

Last 18 inches

Length Driven in Ground 25' Pile Tip Elevation 930.33

No. of blows last 6" 27 Last 3" 15 Last 2" 10 Last 1" 5

Remarks: This pile to be tested under Item 88 PLT - Pile Load Test

B H Dell
Engineer in Charge

*O= Ground at time of driving

* Determined by use of Link Belt Speeder Rating Instrument

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOIL MECHANICS BUREAU
SUBSURFACE EXPLORATION LOG
(STATE FORCES)

DISTRICT NO. 9
COUNTY Broome & Chenango
B.S.M. PROJ. NO. 9357.02

HOLE NO. DH 39
LINE & STA. 725 + 50
OFFSET Rt. 33'

PROJECT Harpursville - Afton (ML Structure over Susq. River)
QUAD. LOCATION _____ DATE, START 12/14/71 SURF. ELEV. 934.4'
SOIL SERIES _____ DATE, FINISH 12/17/71 DEPTH TO WATER 4.5'
(ALSO DESCRIBE UNDER "REMARKS")

CASING O.D. 2 7/8" I.D. 2½" | WEIGHT OF HAMMER 300# | HAMMER FALL
SAMPLER O.D. 2" I.D. 1⅜" | INSIDE LENGTH OF SAMPLER 24" | CASING 18" SAMPLER 18"

DEPTH BELOW SURFACE	BLOWS ON CASING	SAMPLE NO.	BLOWS ON SAMPLER 0/6	6/12	12/18		CROSS SECTION	MOISTURE	COLOR	DESCRIPTION OF SOIL AND ROCK	REMARKS
0	9	J1A					21.6		Br	SILT, tr sand w/roots (0.0 to 5.0)	non-plastic; water level 4.5'
	11										
	15										
	10										
5	11										
	5	J1	1	1			21.5		Br	FINE SAND, some silt (5.0 to 15.0)	very soft, non-plastic
	7				1	2					
	6										
	9										
10	8										
	22	J2	2	1			24.3		Br		
	44				2	3					
	72										
	86										
15	77										
	71	J3	21	25			17.1		Br	FINE TO COARSE SAND & GRAVEL, some silt (15.0 to 25.0)	med. comp., non-plastic
	75				18	43					
	77										
	76										
20	53										
	67	J4	10	7			19.6		Br		
	80				8	15					
	80										
	61										
25	67										
	62	J5	60	13			9.5		Br	COARSE SAND & GRAVEL, some silt (25.0 to 35.0)	med. comp., non-plastic
	184				10	23					
	123										
	88										
30	81										
	75	J6	16	16			9.0		Br		
	90				14	30					
	135										
	100										
35	103										
	107	J7	26	23			11.0		Br	COARSE SAND & GRAVEL, some silt, tr clay (35.0 to 40.0)	compact, low-plastic
	181				23	46					
	150										
	171										
40	172										
		J8	25	32			11.1		Gry	COARSE SAND & GRAVEL, some silt (40.0-41.5)	compact, non-plastic
					33	65					
											Bottom of hole 41.5'
45											
0											

(SUM OF BLOWS FROM 6" TO 12" AND 12" TO 18")

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO BIDDERS ONLY THAT THEY MAY HAVE ACCESS TO IDENTICAL INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF THE BIDDER.

DRILL RIG OPERATOR Henry P. Usmail
SOIL DESCRIPTIONS J. Watson & A. Andrews
ROCK DESCRIPTIONS _____
DISTRICT SOILS ENGR. W. M. Green

SHEET 1 OF 1. HOLE NO. DH 39

SM 282b (7/69)

NEW YORK
BOSTON

RAAMOT ASSOCIATES
CONSULTING ENGINEERS

SYRACUSE

BY ETN DATE 7-26-73 PROJECT BRIDGE 12, FHWA 72-5 SHEET NO. ____ OF ____
CHKD. BY ____ DATE ____ SUBJECT RIVER LEVELS ADJACENT TO JOB NO. ____
REVISED ____ TEST PILE SITE DURING TESTING

DATE	RIVER ELEVATION
1973	
July 17	944.4
July 18	944.2
July 19	944.2
July 20	944.1
July 23	943.9

GUILD-MOULTON CONSTRUCTION CORP.
A DIVISION OF [illegible] INDUSTRIES, INC.
POST OFFICE BOX [illegible]
[illegible] PROVIDENCE, R.I. 02914

PHONE (401) 434-1733
OFFICE: 100 WATER STREET, EAST PROVIDENCE, R. I.
BRANCH: 201 SO. MAIN STREET, NO. SYRACUSE, N. Y.
PHONE (315) 458-8454

May 10, 1973

Perini Corporation
73 Mt. Wayte Avenue
Framingham, Mass.
01701
ATTN: Bob Bradley

RE: FISH 72-5, FARC 72-151
Data For Load Test Item 88 PLT

Gentlemen:

Please review and submit for approval the following information as required by the specifications under Item 88 PLT:

a) 1. Hammer - Linkbelt Model 520 diesel pile hammer, specifications enclosed.
2. Drive Cap - Linkbelt Model HP-1 Filler; weight, 300 lbs.
3. Cushion and Cap Block - 5 Micarta and 4 aluminum discs, alternately spaced; dimensions, 12"x4¼" high.
4. Rated Hammer Energy - Equivalent W.H. Energy Rating; 26,300 ft.lbs. max.
5. Rate of Operation - 80 to 84 blows per minute under resistance conditions.
6. Height of Fall - Equivalent "WH" ram stroke 62.19 inches.
7. Weight of Ram - 5070 lbs.

b) 1. Pile - 12" BP-53. Weight per LF, 53 lbs; area of steel 15.58 square inches.
2. Point - BP 75750. Distributor, Assoc. Pile & Fitting Corp; dimensions as noted on enclosed print; weight, 28 lbs.

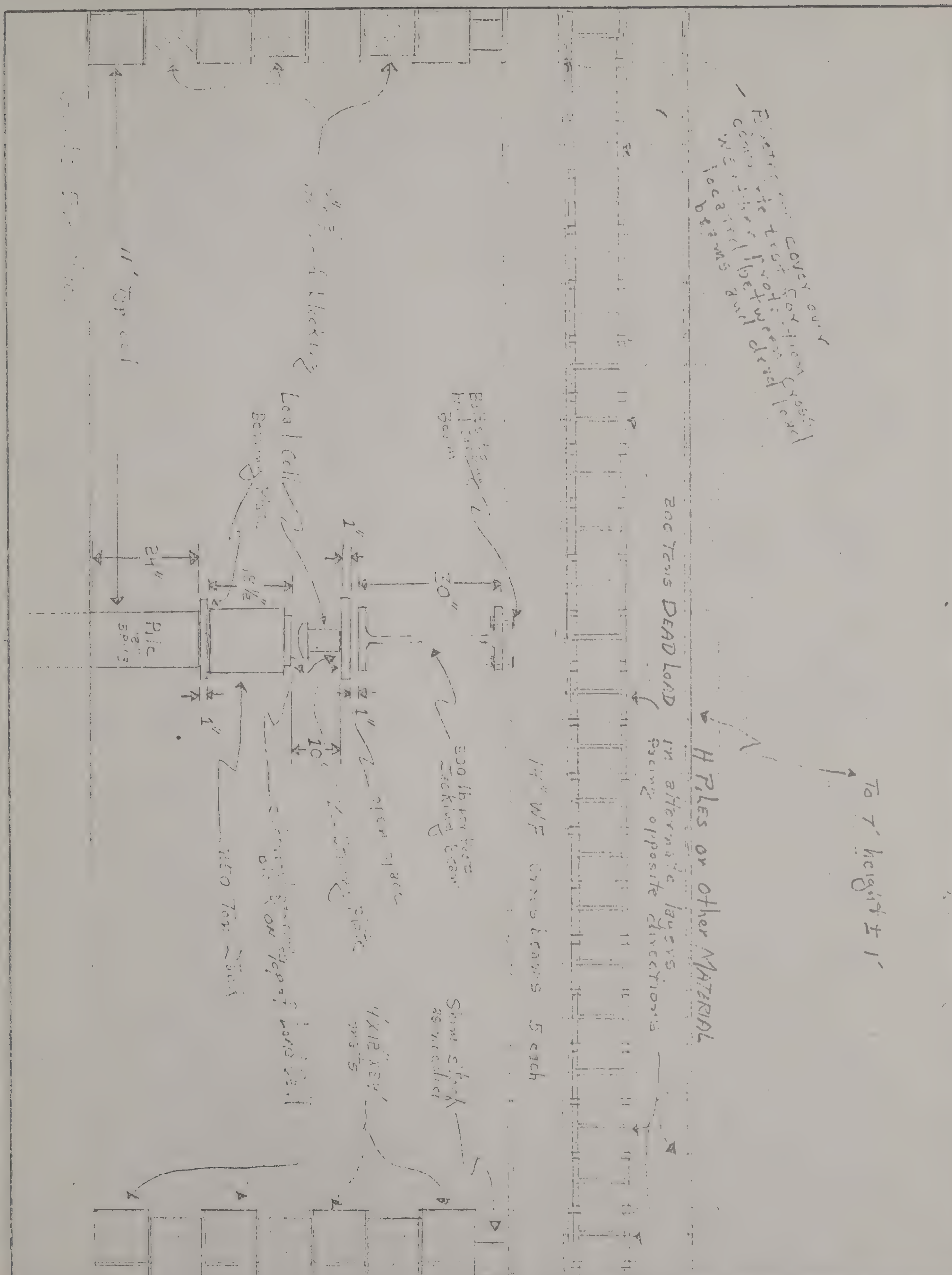
c) 1. Dead Load Type - Load consisting of 200 tons of steel beams.
2. Reaction Beam - Dimensions: 21' long, 14¼"x1½" flange, 30 3/8" x 13/16" web.
3. Load Cell - Capacity, 500 tons; Type, SR-4 Strain Indicator.
4. Test Jacks - Capacity, 250 tons: Richard Dudgeon with nitrogen-operated load control.
5. Reference Beams - 8" BP 36 supported by 2½" pipe driven in ground with beam fixed on one end and free on the opposite end to allow for expansion and contraction.

Sketches and specifications on equipment are enclosed.

Very truly yours,

Phil Smith
New York District Manager
Guild-Moulton Const. Corp.

PSS/jh



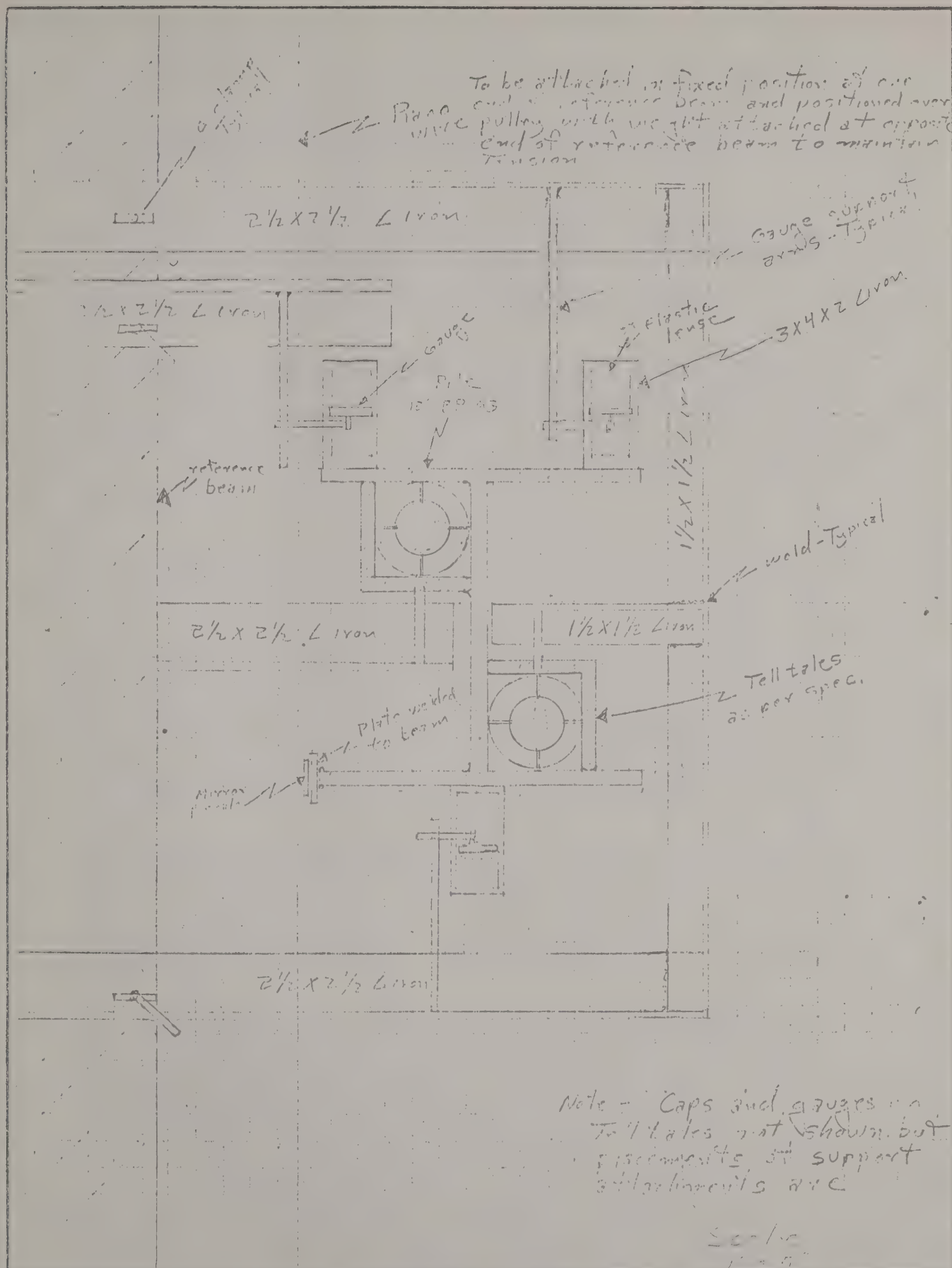
GM BY SUBJECT Load Test SHEET NO. 1 OF 4

DATE 5/9/ JOB NO.

GM

BY _____ SUBJECT _____ SHEET NO. _____ OF _____

DATE _____ JOB NO. _____



GM

BY [illegible] SUBJECT Load Test [illegible] SHEET NO. 3 OF 4

DATE 5/9/72 [illegible] JOB NO.

1. All details and dimensions not shown will conform to the requirements of the specifications as delineated in section Item 88 PLT-Pile Load Test.

2. The hydraulic jack pressures will be regulated automatically by a nitrogen compensation unit as shown in enclosed literature.

3. Because of space requirements for the amount of devices used it was deemed impractical to install the reference beam at the same elevation as the top of the pile. It is located approximately 6" below Top of Pile elevation.

4. We propose to use the dial adjacent to the webb as the governing dial in the C.R.P. Test. We are developing a pacer unit to control the C.R.P. rates to eliminate error in time and pumping pressures to achieve rate of penetration. The jack pressures will be controlled by a valve which eliminates the possibility of not being able to pump fast enough by hand to achieve rate of penetration.

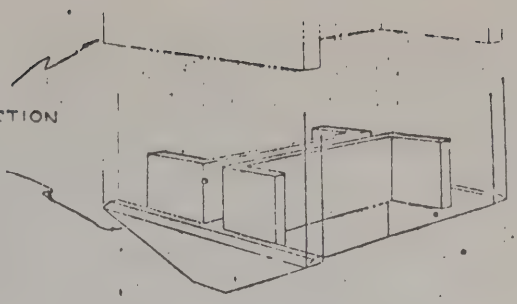
5. The firm of Raamot Associates will be the engineers on the test. They are well experienced in all phases of Pile Load Testing. Raamot's Syracuse office will be handling the test.

6. Tell Tales are placed on opposite sides of webb to maintain a symmetrical configuration which will reduce the effects of the Tell Tales on the driving characteristics of the pile.

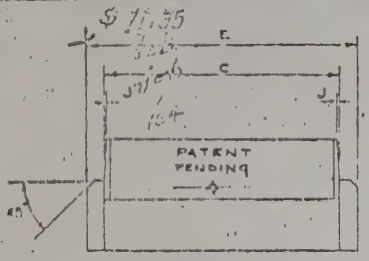
THE PRUYN POINT IX — FIGURE DP 75750

TABLE "A" - TOTAL LENGTH OF 5/8" WELD REQUIRED FOR EACH POINT

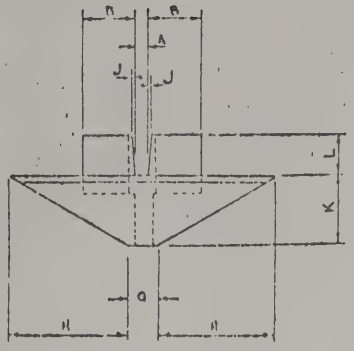
8		10		12		14	
WEIGHT	WELD	WEIGHT	WELD	WEIGHT	WELD	WEIGHT	WELD
36	16"	42	20"	55	24"	75	29"
		49	22"	62	24"	88	30¼"
		57	20½"	74	24½"	100	30½"
						117	30¾"



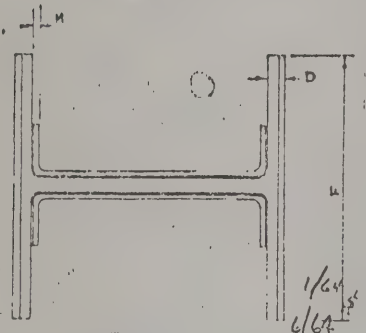
ORTHOGRAPHIC PROJECTION
(SHOWING RELATIONSHIP BETWEEN POINT & H-BEAM)



FRONT



SIDE



TOP

GENERAL NOTES

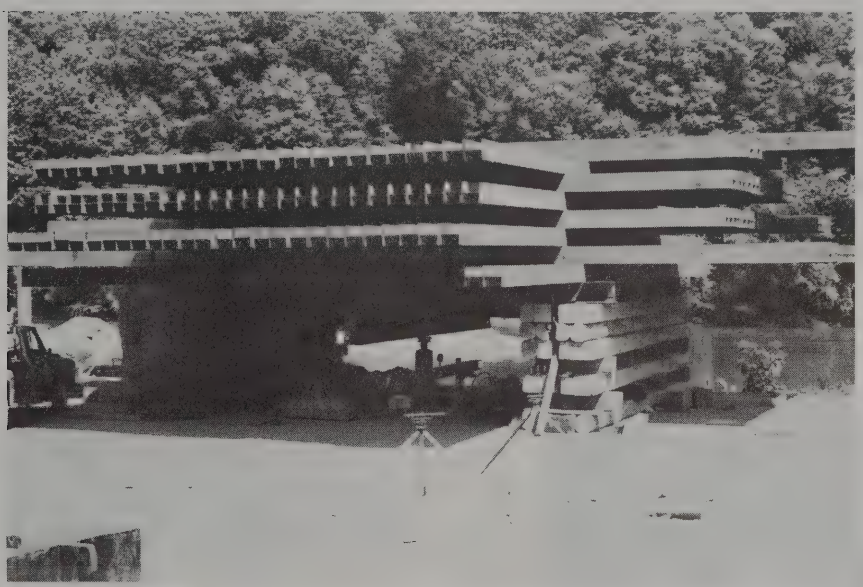
1. MATERIAL - CAST STEEL (A.S.T.M. A-27-58-65-35)
2. TOLERANCES - DIMENSIONS A & C = ±0.00, - 1/16"
   OTHERS = ± 1/16"
3. ALL FILLETS = 5/8"
4. ALL WELDS BETWEEN H-BEAM & POINT TO BE IN ACCORDANCE WITH A.W.S. SPECIFICATIONS (LATEST EDITION). WELD FLANGES TO FITTING ON OUTSIDE FACES. RECOMMENDED AMOUNT OF WELDING SHOWN IN TABLE "A".

MODEL NUMBER	A	D	C	D	E	F	G	H	J	K	L	M	WEIGHT LBS.
8	5/8"	1 3/4"	7"	5/8"	8"	8 1/16"	1"	3 3/8"	1/16"	2 1/2"	1"	1/4	14
10	3/4"	2"	8 1/4"	3/4"	10"	10 1/16"	1 1/4"	4 1/2"	1/16"	3"	1 1/2"	1/4	20
12	3/4"	2 1/2"	10 1/4"	3/4"	12 1/8"	12 1/4"	1 1/4"	5 1/2"	1/16"	3 1/4"	2"	1/4	28
14	1"	2 3/4"	12 1/2"	1"	14 1/2"	14 7/8"	1 5/8"	6 11/16"	1/16"	4"	2 1/2"	1/4	45

Photographs 1-7 were made on completion of second CRP test, July 23, 1973. Photographs 8-13 were made on completion of first CRP test, except for No. 11 made during holding period when maximum test load was on pile.

1. Load test set-up looking SW.
2. Load test set-up looking NE.
3. Load test set-up looking NE.
4. Close-up view looking east.
5. Close-up view looking north.
6. Close-up view looking west.
7. Close-up view looking south.
8. Load test set-up looking east.
9. Close-up view looking east.
10. Close-up view looking north.
11. Close-up view looking NE with maximum test load on pile.
12. Close-up view looking west.
13. Bench mark used - spike in tree base.

1



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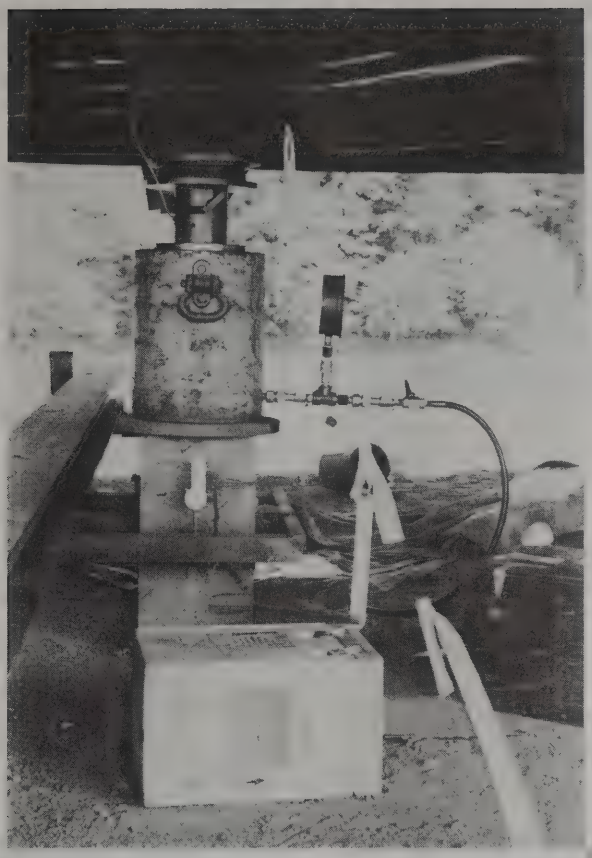

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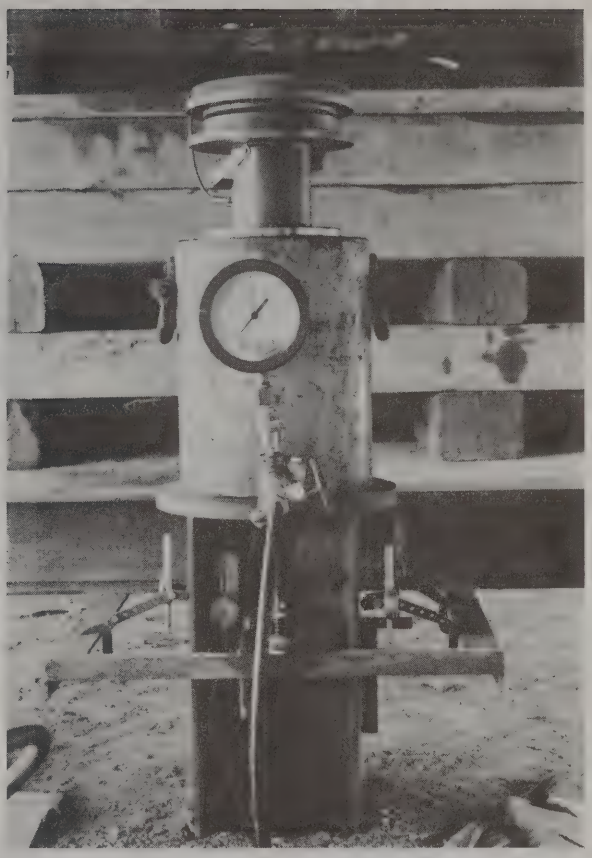

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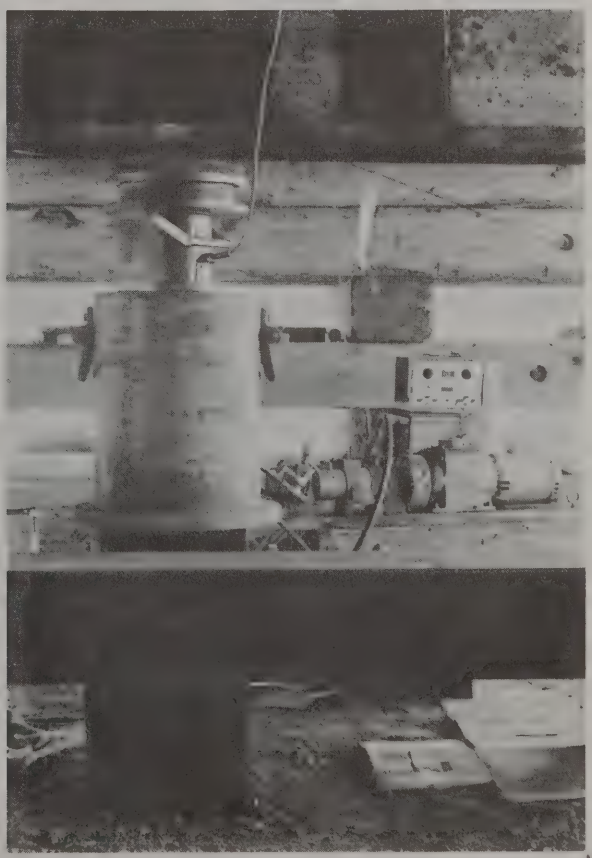

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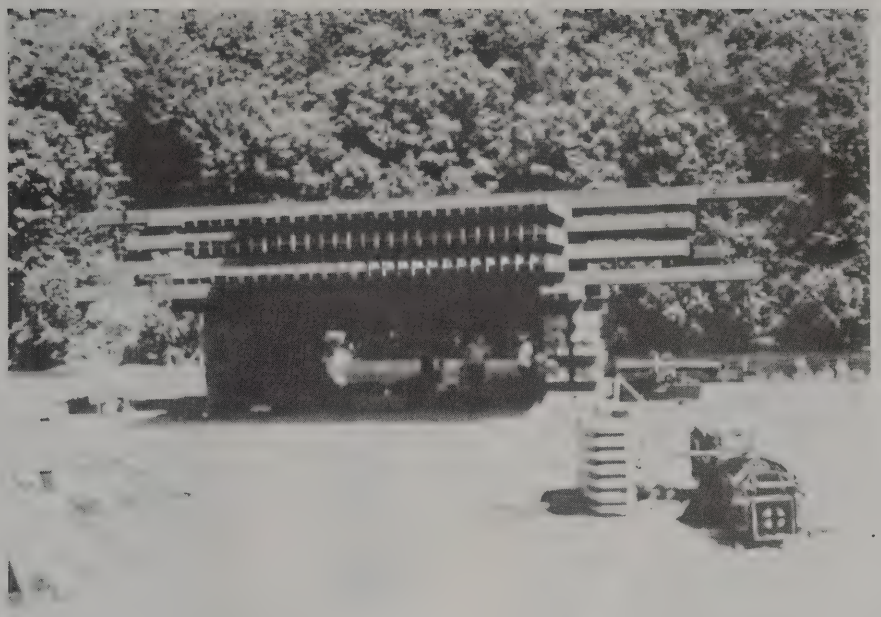

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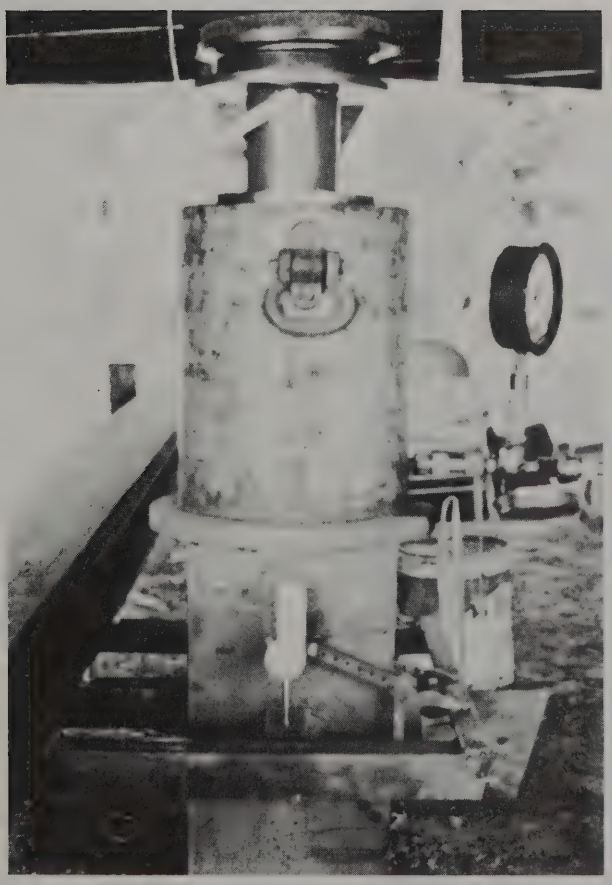

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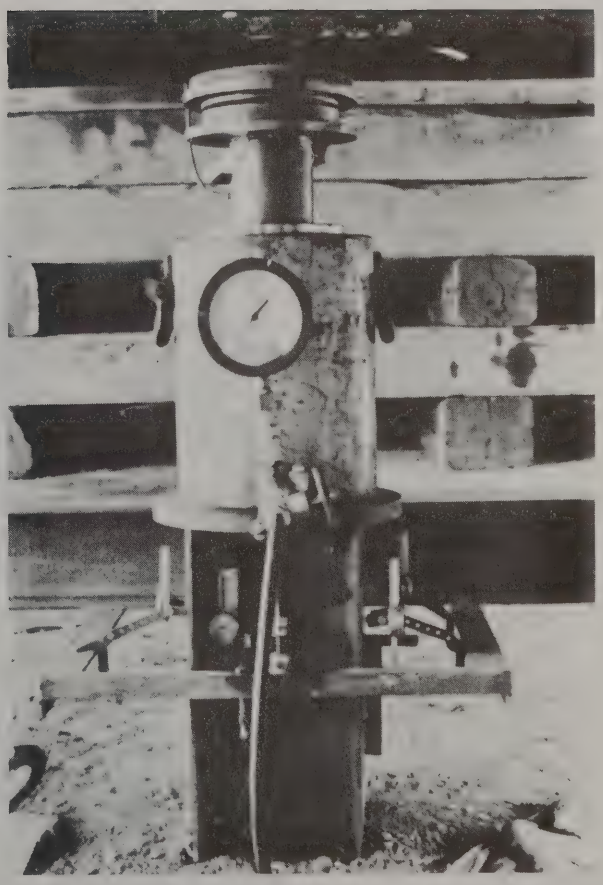
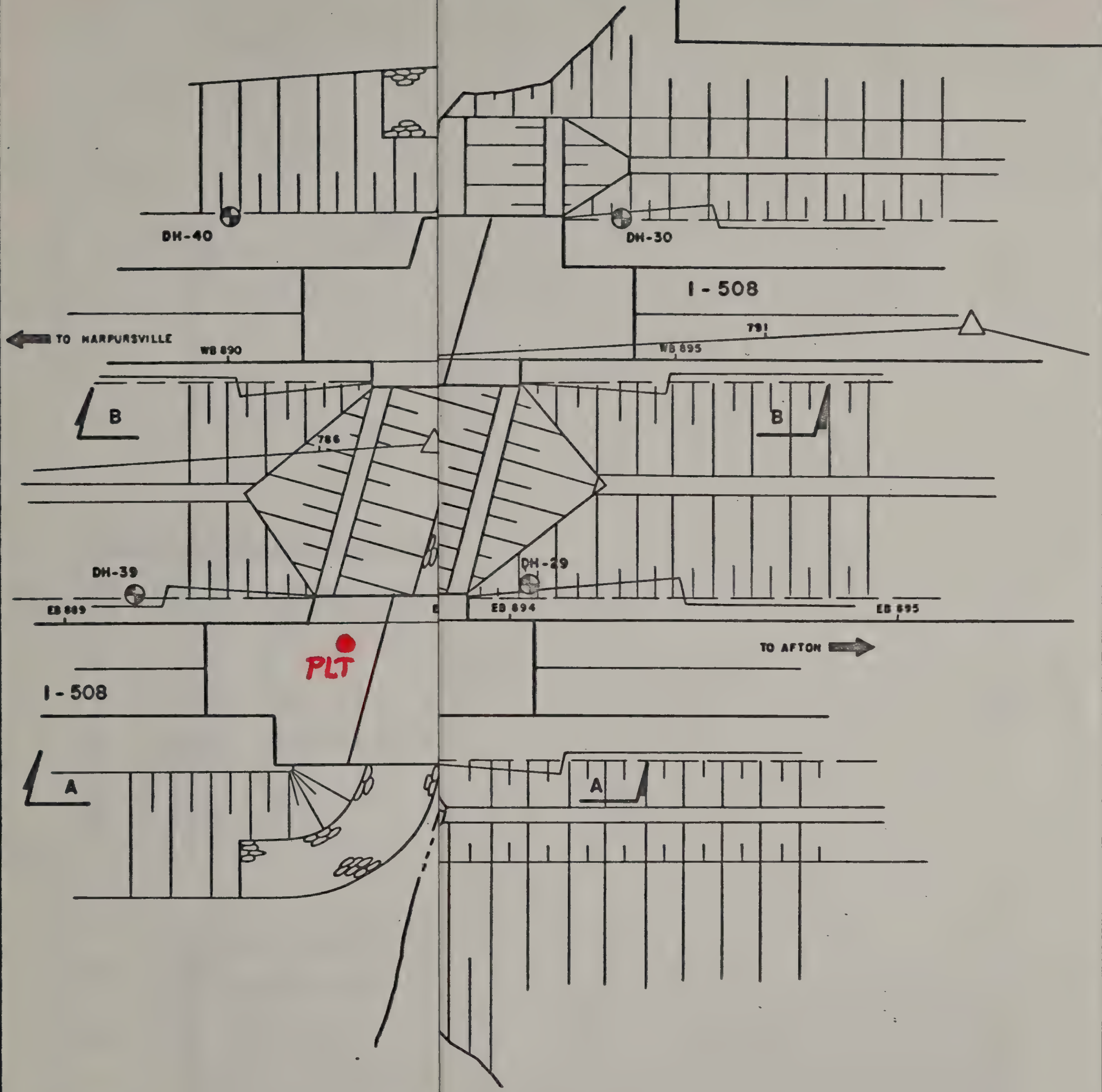


10

11

12

13



GENERAL

The subsurface explorations shown here
1970 and December 17, 1971 by the

1) General Soil Strata descriptions an
interpretation of all available subsur
show the actual variation in subsurfac

2) The observed water levels and/or co
are as recorded at the time of drillin
may vary considerably, with time, acco
and other factors.

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is for the purpose of providing others
available to the State. This informat
intended as a substitute for personal
judgment of the Contractor.

4) All structure details shown hereon
may not be indicative of the final des

SIGN INFORMATION

MINARY STRUCTURE PLANS
SED FOR ANALYSIS

ARED BY:
STRUCTURES DESIGN AND
TRUCTION SUBDIVISION
E: 1" = 20' DATE: 1/13/72

ARED BY: *[signature]*
N BY: *[signature]*
KED BY: *[signature]*

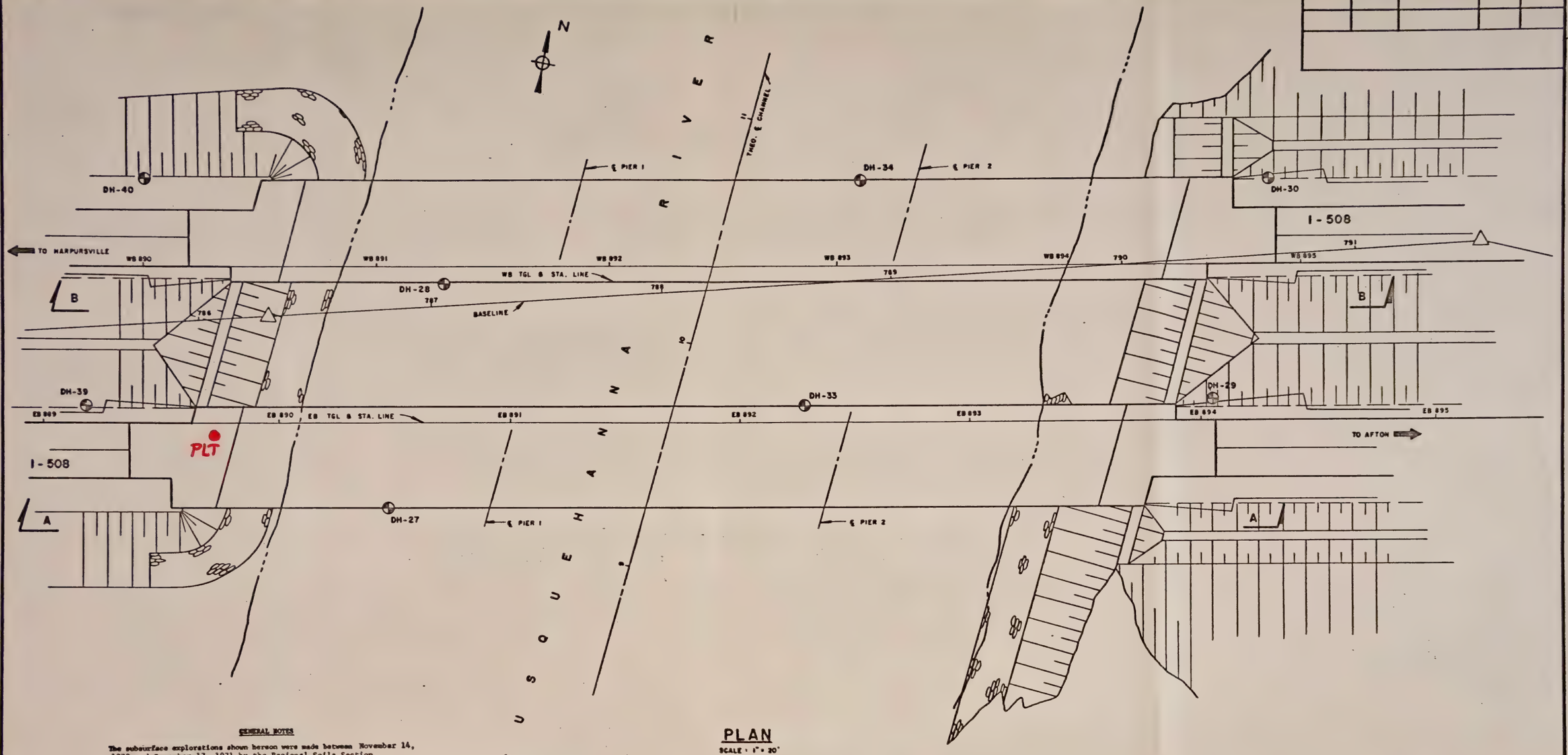
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOILS MECHANICS BUREAU

INTERSTATE ROUTE 508 (I-88)
HARPURSVILLE - AFTON
P.I.N. 9357-02-111 -
PLAN FOR
BRIDGE NO. 12 MAINLINE
OVER SUSQUEHANNA RIVER

APPROVED Feb. 29 1972 *[signature]*
DIRECTOR

REGION NO. 9
COUNTY BROOME
DRAWING NO. 9 SM 1749 A

9357.02



PLAN
SCALE : 1" = 20'

GENERAL NOTES

The subsurface explorations shown hereon were made between November 14, 1970 and December 17, 1971 by the Regional Soils Section.

1) General Soil Strata descriptions and indicated boundaries are based on interpretation of all available subsurface information and may not necessarily show the actual variation in subsurface conditions between borings and samples.

2) The observed water levels and/or conditions indicated on the soil profiles are as recorded at the time of drilling. These water levels and/or conditions may vary considerably, with time, according to the prevailing climate, rainfall and other factors.

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4) All structure details shown hereon are for illustrative purposes only and may not be indicative of the final design conditions shown in the contract plans.

LEGEND

The following tables summarize the descriptive information used on this profile.

DH Drill Hole

Amount of Component Material	
Primary Component Capitalized	
"and"	30% to 40% of secondary component
"some"	40% to 10% " " "
"trace"	10% to less " " "

Density (Non Plastic Soils)	Avg. No. of Blows per foot for 18 in. drop of 300 lb. hammer 2 in. O.D. Sampler
Very Loose	0-3
Loose	3-8
Medium Compact	8-20
Compact	20-35
Very Compact	over 35
Consistency (Plastic Soils)	
Very Soft	0-2
Soft	2-4
Firm	4-12
Stiff	12-20
Hard	over 20

DESIGN INFORMATION

PRELIMINARY STRUCTURE PLANS USED FOR ANALYSIS

PREPARED BY: THE STRUCTURES DESIGN AND CONSTRUCTION SUBDIVISION

SCALE: 1" = 20' DATE: 1/13/72

PREPARED BY: D. S. McLeod

DRAWN BY: E. Agostara

CHECKED BY: R. C. Haggerty

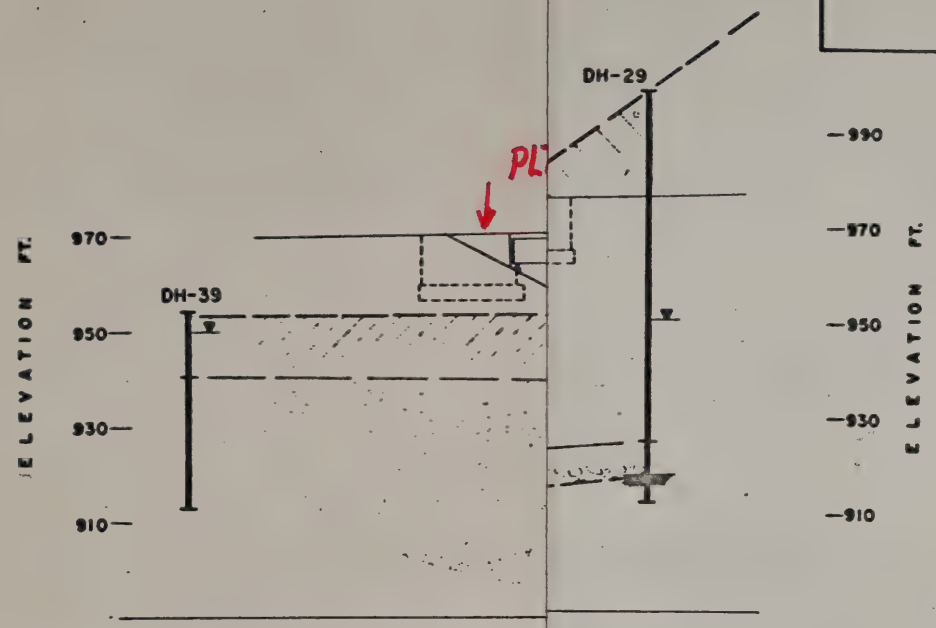
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOILS MECHANICS BUREAU

INTERSTATE ROUTE 508 (I-88)
HARPURSVILLE - AFTON
P.I.N. 9357-02-111 -
PLAN FOR
BRIDGE NO. 12 MAINLINE
OVER SUSQUEHANNA RIVER

APPROVED Feb. 29 1972
[illegible]
DIRECTOR

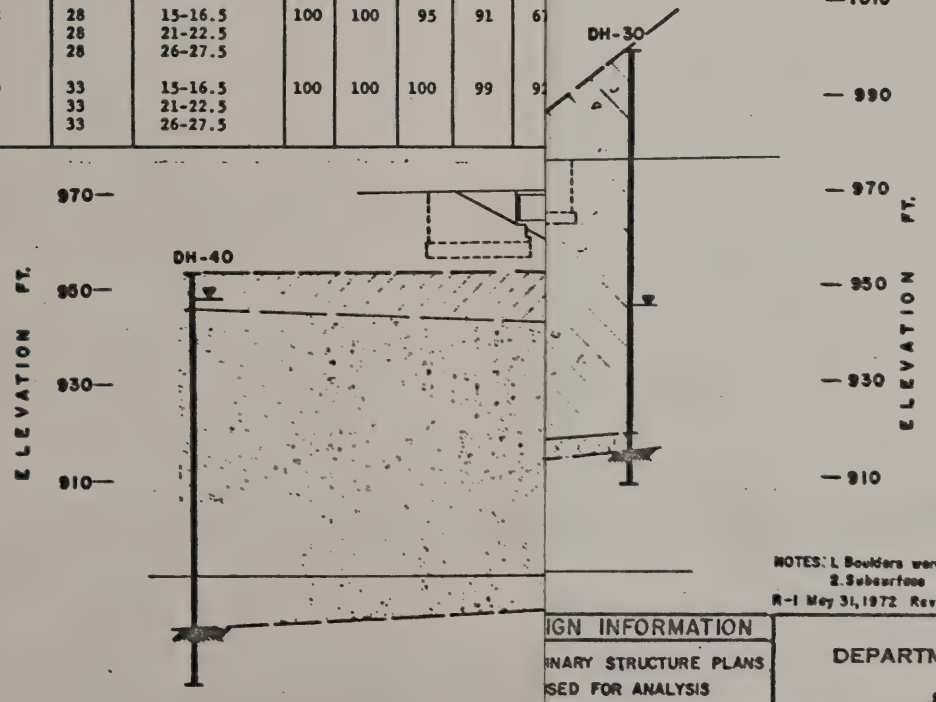
REGION NO. 9
COUNTY BROOME
DRAWING NO. 9 SM 1749 A

9357.02



LABORATORY GRAIN SIZE DISTRIBUTION TEST SUMMARY

Combined Sample	Drill Hole No.	Representative Sample Depth - Ft. (See Note 3)	% Passing by Weight U.S. S 1"	½"	¼"	10	4(
A	27	5-6.5	87	63	50	35	2(
	33	5-6.5					
	34	7-8.5					
B	27	10-11.5	100	98	95	87	4(
	28	10-11.5					
C	28	15-16.5	100	100	95	91	6
	28	21-22.5					
	28	26-27.5					
D	33	15-16.5	100	100	100	99	9
	33	21-22.5					
	33	26-27.5					



NOTES: 1. Boulders were encountered over bedrock in drill holes 27,28,29 & 34
2. Subsurface foundation soil deposits in this area are assumed
R-1 May 31, 1972 Revision due to footing elevation changes.

The subsurface explorations shown hereon were made between November 1970 and December 17, 1971 by the Regional Soils Section.

1) General Soil Strata descriptions and indicated boundaries are base interpretation of all available subsurface information and may not n show the actual variation in subsurface conditions between borings a

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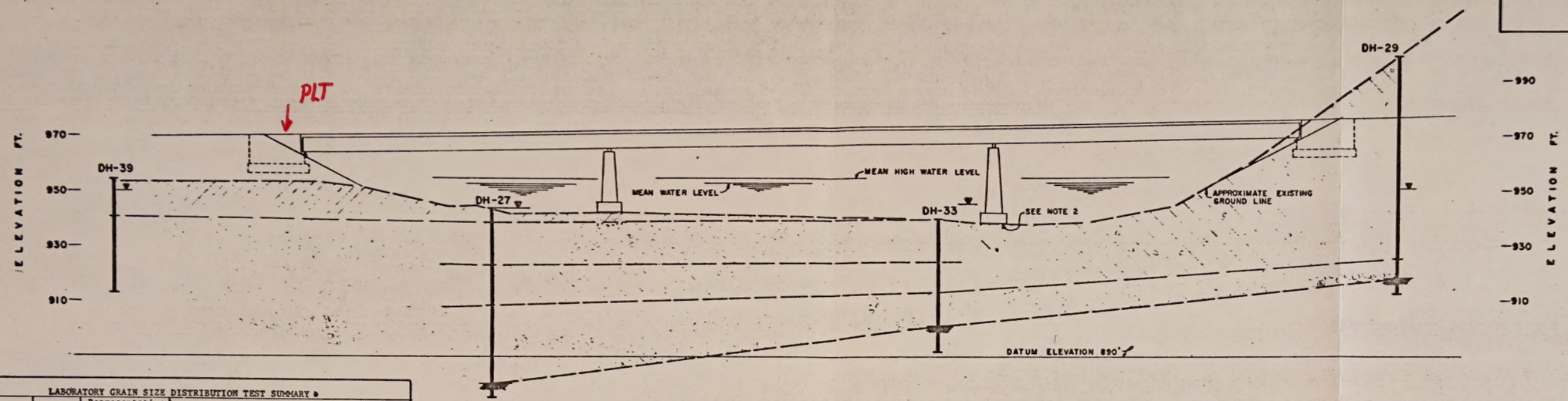
IGN INFORMATION
INARY STRUCTURE PLANS
SED FOR ANALYSIS
RED BY:
STRUCTURES DESIGN AND
TRUCTION SUBDIVISION
1"=20' DATE: 1/13/72
RED BY
BY
ED BY

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOILS MECHANICS BUREAU

INTERSTATE ROUTE 508 (I-88)
HARPURSVILLE - AFTON
P.I.N. 9357-02-111
GENERAL SUBSURFACE PROFILES FOR
BRIDGE NO. 12 MAINLINE
OVER SUSQUEHANNA RIVER

APPROVED Feb. 29 1972
DIRECTOR
REGION NO. 9
COUNTY BROOME
DRAWING NO. 9 SM 17498

9357.02



LABORATORY GRAIN SIZE DISTRIBUTION TEST SUMMARY *								
Combined Sample	Drill Hole No.	Representative Sample Depth - Ft. (See Note 3)	% Passing by Weight U.S. St'd. Sieve No. 1"	½"	¼"	10	40	200
A	27 33 34	5-6.5 5-6.5 7-8.5	87	63	50	35	20	13
B	27 28	10-11.5 10-11.5	100	98	95	87	46	23
C	28 28 28	15-16.5 21-22.5 26-27.5	100	100	95	91	67	33
D	33 33 33	15-16.5 21-22.5 26-27.5	100	100	100	99	92	51

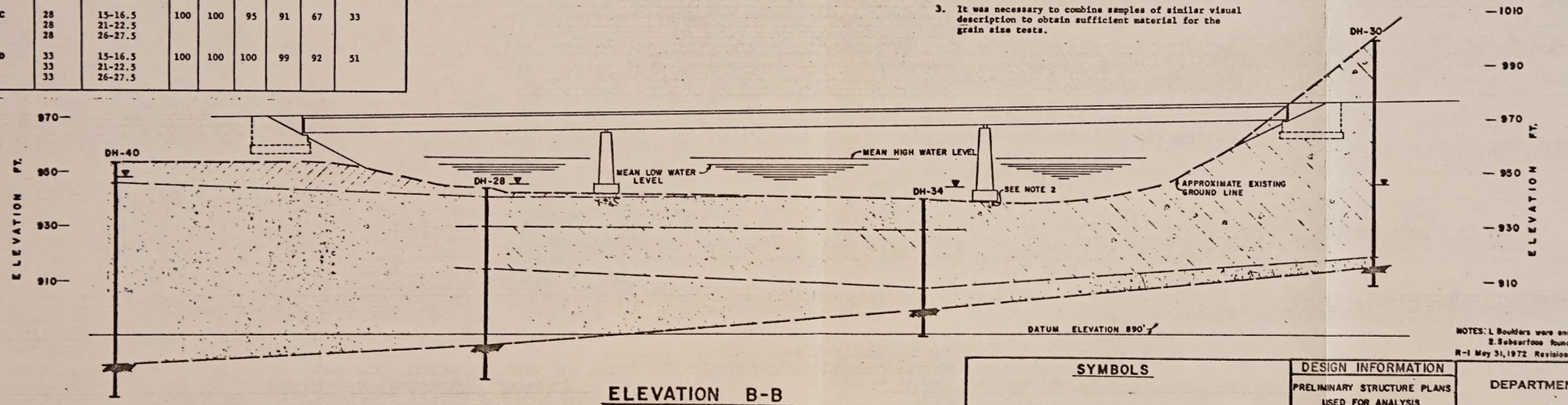
ELEVATION A-A

SCALE 1" = 20'

BORINGS PROJECTED TO FASCIA

*Laboratory grain size distribution test summary notes:

1. The soil samples used for these tests were extracted with a 1½" nominal inside diameter sample spoon.
2. The test method used for these grain size analyses conforms to ASTM Designation D422 as modified by Bureau of Soil Mechanics Technical Manual No. TM(s) 64-2.
3. It was necessary to combine samples of similar visual description to obtain sufficient material for the grain size tests.



ELEVATION B-B

SCALE: 1" = 20'

BORINGS PROJECTED TO FASCIA

NOTES: 1. Boulders were encountered over bedrock in drill holes 27,28,29 & 34
2. Subsurface foundation soil deposits in this area are assumed
R-1 May 31, 1972 Revision due to footing elevation changes.

GENERAL NOTES

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4) All structure details shown hereon are for illustrative purposes only and may not be indicative of the final design conditions shown in the contract plans.

SYMBOLS

OBSERVED WATER LEVEL

Very Loose Brown SILT with some Sand and a trace of Clay

Medium Compact to Very Compact Brown GRAVEL with some Sand and Silt and a trace of Clay

Compact to Very Compact Brown SAND with some Silt and a trace of Gravel and Clay

LEDGEROCK

DESIGN INFORMATION

PRELIMINARY STRUCTURE PLANS USED FOR ANALYSIS

PREPARED BY: THE STRUCTURES DESIGN AND CONSTRUCTION SUBDIVISION

SCALE: 1" = 20' DATE: 1/13/72

PREPARED BY: N. S. Stoddard

DRAWN BY: R. Palcini

CHECKED BY: R. C. Houghton

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOILS MECHANICS BUREAU

INTERSTATE ROUTE 508 (I-88)
HARPURSVILLE - AFTON
P.I.N. 9357-02-111

GENERAL SUBSURFACE PROFILES FOR BRIDGE NO. 12 MAINLINE OVER SUSQUEHANNA RIVER

APPROVED Feb. 29 1972
Wm. P. Hofmann
DIRECTOR

REGION NO. 9
COUNTY BROOME
DRAWING NO. 9 SM 1749BR-1

9357.02

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LRI